"CLINICAL STUDY OF FISTULA IN ANO-ANALYSIS OF VARIOUS SURGICAL MODALITIES IN PSG HOSPITALS A RETROSPECTIVE AND PROSPECTIVE STUDY"

Dissertation submitted in

Partial fulfillment of the requirements for the degree of

M S GENERAL SURGERY

THE TAMILNADU DR.M.G.R.MEDICAL UNIVERSITY

APRIL 2016

DEPARTMENT OF GENERAL SURGERY

PSG INSTITUTE OF MEDICAL SCIENCES & RESEARCH

COIMBATORE

CERTIFICATE

This is to certify that this dissertation entitled "**CLINICAL STUDY OF FISTULA IN ANO – ANALYSIS OF VARIOUS SURGICAL MODALITIES IN PSG HOSPITALS, A RETROSPECTIVE AND PROSPECTIVE STUDY",** is a record of bonafied research work done by DR. A. SUDHAN KUMAR, under my guidance and supervision in the Department of General Surgery, PSG Institute of Medical Sciences and Research, Coimbatore – 641004.

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Dr.S.Ramalingam,
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DECLARATION

I**, DR.A.SUDHAN KUMAR,** solemnly declare that this dissertation **"CLINICAL STUDY OF FISTULA IN ANO ANALYSIS OF VARIOUS SURGICAL MODALITIES IN PSG HOSPITALS, A RETROSPECTIVE AND PROSPECTIVE STUDY,** is a record of bonafide research work done by me in Department of General Surgery, PSG institute of Medical Sciences and Research, Coimbatore, under the guidance of Dr. S.Prem kumar, Professor and HOD of surgery. This dissertation is submitted to the Tamilnadu Dr.M.G.R medical university, Chennai, in partial fulfilment of the University regulations for the award of MS Degree (General Surgery) Branch. University Examination to be held in April 2016.

Place:Coimbatore Dr. A. Sudhan Kumar

Date: 30.09.2015

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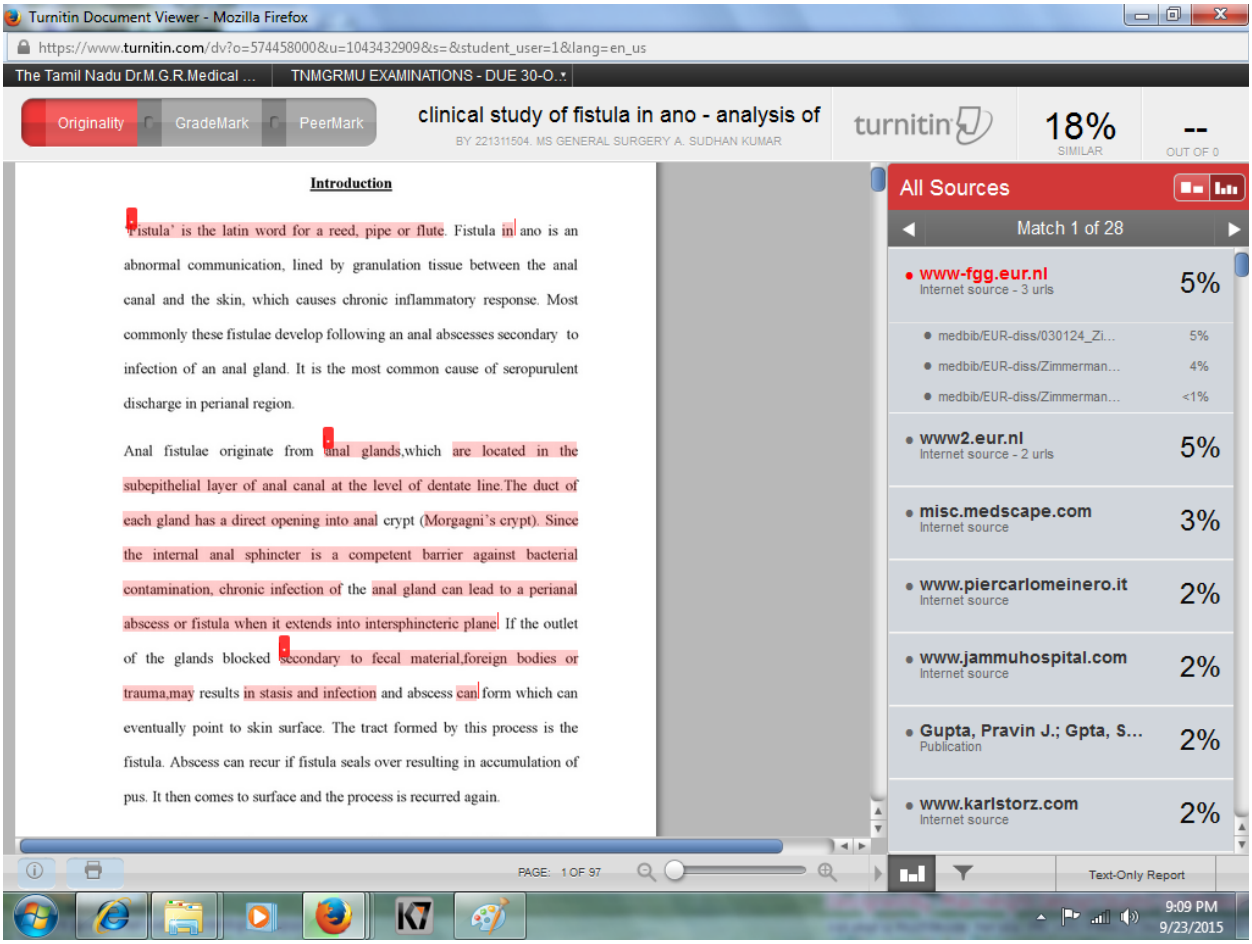
My utmost respect and gratefulness to my parents, whose blessings and support, helpful in doing the study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Introduction
'Fistula' is the latin word for a reed, pipe or flute. Fistula in ano is an abnormal communication, lined by granulation tissue between the anal canal and the skin, which causes chronic inflammatory response. Most commonly these fistulae develop following an anal abscesses secondary to infection of an anal gland. It is the most common cause of seropurulent discharge in perianal region.
Anal fistulae originate from anal glands,which are located in the subepithelial layer of anal canal at the level of dentate line.The duct of each gland has a direct opening into anal crypt (Morgagni's crypt). Since the internal anal sphincter is a competent barrier against bacterial contamination, chronic infection of the anal gland can lead to a perianal abscess or fistula when it extends into intersphincteric plane. If the outlet of the glands blocked secondary to fecal material,foreign bodies or trauma,may results in stasis and infection and abscess can form which can eventually point to skin surface. The tract formed by this process is the fistula. Abscess can recur if fistula seals over resulting in accumulation of pus. It then comes to surface and the process is recurred again.
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December 12, 2014

To
Dr A Sudhan Kumar
Postgraduate
Department of General Surgery
PSG IMS & R
Coimbatore

The Institutional Human Ethics Committee, PSG IMS & R, Coimbatore -4, has reviewed your proposal on 12th December, 2014 in its expedited review meeting held at IHEC Secretariat, PSG IMS&R, between 10.00 am and 11.00 am, and discussed your request to amend the title of your study and collect retrospective data for your study entitled:

"Comparison of morbidity between sphincter sparing surgery for fistula in ano (Lift procedure) with other conventional surgeries for fistula in ano, in PSG Hospitals - a prospective study "

The following documents were received for review:

1. Amendment reporting form dated 09.12.2014
2. Protocol version 1.1
3. Application for waiver of consent
4. Confidentiality statement

After due consideration, the Committee has decided to approve the following:

1. To modify the title as 'Clinical study on fistula in ano - analysis of various surgical treatment modalities in PSG Hospitals – A retrospective and prospective study'
2. To collect retrospective data

The members who attended the meeting held on at which your proposal was discussed, are listed below:

Name	Qualification	Responsibility in IHEC	Gender	Affiliation to the Institution Yes/No	Present at the meeting Yes/No
Dr P Sathyan	DO, DNB	Clinician, Chairperson	Male	No	Yes
Dr S Bhuvaneshwari	M.D	Clinical Pharmacologist Member - Secretary	Female	Yes	Yes
Dr. S.Shanthakumari	MD	Pathology, Ethicist	Female	Yes	Yes
Dr D Vijaya	Ph D	Member - Basic Scientist	Female	Yes	Yes

This Ethics Committee is organized and operates according to Good Clinical Practice and Schedule Y requirements.

Non-adherence to the Standard Operating Procedures (SOP) of the Institutional Human Ethics Committee (IHEC) and national and international ethical guidelines shall result in withdrawal of approval (suspension or termination of the study). SOP will be revised from time to time and revisions are applicable prospectively to ongoing studies approved prior to such revisions.

Kindly note this approval is subject to ratification in the forthcoming full board review meeting of the IHEC.

Yours truly,

12-12-14

Dr S Bhuvaneshwari
Member – Secretary

SECRETARY
PSG IMS&R
COIMBATORE-641004.
INSTITUTIONAL HUMAN ETHICS COMMITTEE

Proposal No. 14/126

ABSTRACT

CLINICAL STUDY OF FISTULA IN ANO – ANALYSIS OF VARIOUS SURGICAL MODALITIES IN PSG HOSPITALS, A RETROSPECTIVE AND PROSPECTIVE STUDY

INTRODUCTION:

Fistula is an abnormal communication lined by granulation tissue between anal canal and skin, which causes chronic inflammatory process. It occurs secondary to infection of anal gland. It develops in 26-38% of patients following anal abscess. Incidence in men 12.3/1lakh population and in women 5.6/1lakh population. Surgery is the treatment for fistula in ano. Fecal incontinence, recurrence, persistent discharge can occur following surgery. Hence sphincter saving surgery (LIFT, VAAFT) practiced now a days. It is necessary to select ideal surgical procedure for fistula and continuous follow up of patient becomes mandatory.

AIMS AND OBJECTIVES:

My study is both retrospective and prospective analysis of patients who underwent fistula surgery in PSG hospital. Main objective is to identify

1. Incidence in male and female
2. Etiology

3. Symptoms
4. Various surgical techniques
5. Complications
6. Follow up

The aim of my study includes

- A retrospective and prospective analysis of various surgical treatment modalities in PSG hospitals on fistula in ano
- To analyse the morbidity in patients fulfilling the inclusion / exclusion criteria, from admission till 6 months post operatively
- To review the pathophysiology of anal fistula
- To review both simple and complex fistulas and treatment options
- To compare and analyse the efficacy and outcomes of all surgical treatment options

METHODOLOGY:

Type of study : retrospective and prospective study

Period of study: jan 2014 to june 2015

Place of study: PSG IMSR, Coimbatore

Sample size: 75 cases

Plan of study:

The detailed case history, clinical examination, type of surgery, duration of study, complications of cases recorded.

The following factors were compared for newer and older surgical techniques:

- ✓ Anaesthesia, technique and operative care
- ✓ Duration of surgery
- ✓ Intra operative complications
- ✓ Post operative complications – pain, discharge, bleeding, faecal incontinence
- ✓ Length of hospital stay
- ✓ Cost effectiveness
- ✓ Post op readmissions
- ✓ Recurrence

INCLUSION CRITERIA

- All types of fistulas – both high and low
- Both male and female patients

EXCLUSION CRITERIA

- Medical and surgical contraindications to spinal anaesthesia
- Severe comorbidities
- Superficial fistula
- Complex fistula due to the following causes – inflammatory bowel disease, previous radiation therapy, TB, steroids, HIV
- Diverticulitis

OBSERVATION:

In my study, 75 cases that were operated, 80% cases were simple and 20% cases were complex fistulas. Around 80% of patients belong to age group 30 – 50 years of age. Fistulectomy and fistulotomy performed more. Newer modalities like LIFT, VAAFT also performed in my institution. Intersphincteric fistula being the most common fistula operated which constitutes about 46%. Post operative period patients had complaints like pain, discharge, fever, bleeding, fecal incontinence, itching at wound site, constipation. Most commonest complaint being pain at the operated site. Patients also had comorbidities like diabetes, hypertension etc. which were also noted. Mean stay of patients in hospital around 4-6 days. Recurrence occurred in 5 cases which constitutes about 7%. Recurrence encountered in 2

fistulectomy cases, 2 fistulotomy cases, 1 LIFT procedure. Mean period of recurrence is 3 months following surgery.

CONCLUSION:

Fistula in ano is one of the commonest problem encountered. Surgery is the treatment of choice. Patient may have recurrence, fecal incontinence following surgery. Hence proper assessment, appropriate surgical procedure and regular follow up of patients become mandatory

CONTENTS

CONTENTS

INTRODUCTION

INTRODUCTION

'**Fistula**' is the latin word for a reed, pipe or flute. Fistula in ano is an abnormal communication, lined by granulation tissue between the anal canal and the skin, which causes chronic inflammatory response. Most commonly these fistulae develop following an anal abscesses secondary to infection of an anal gland. It is the most common cause of seropurulent discharge in perianal region.

Anal fistulae originate from anal glands, which are located in the subepithelial layer of anal canal at the level of dentate line.The duct of each gland has a direct opening into anal crypt (Morgagni's crypt). Since the internal anal sphincter is a competent barrier against bacterial contamination, chronic infection of the anal gland can lead to a perianal abscess or fistula when it extends into intersphincteric plane. If the outlet of the glands blocked secondary to fecal material,foreign bodies or trauma,may results in stasis and infection and abscess can form which can eventually point to skin surface. The tract formed by this process is the fistula. Abscess can recur if fistula seals over resulting in accumulation of pus. It then comes to surface and the process is recurred again.

Anal fistulae alone do not cause any problem,it can be painful or irritating due to the pus draining through it. There is also possibility of formed stools passing through the fistula. Recurrent abscess results in morbidity like pain, it may be source of spread of infection.

Surgery for fistula in ano is considered essential for decompression of acute abscesses and to prevent spread of infection. Now adays, fistula surgery is done as an elective procedure due to patients discomfort, problems associated with it. Fistula may present with pain, discharge,(either bloody or purulent),pruritis ani(itching sensation in perianal region),bleeding PR, diarrhea, skin excoriation,systemic manifestation if the abscess become infected. Some patients may present with active infection which often requires antibiotic treatment and clearing up, before definitive treatment.

Fistula may be associated with the following diseases like inflammatory bowel disease, diverticulitis, tuberculosis, HIV infection, previous radiation exposure or steroid therapy. These patients may present with abdominal pain, weight loss, change in bowel habits. Hence associated diseases should be investigated and ruled out before doing definitive treatment for fistula in ano.

Antibiotics alone wont provide cure for fistula. It often needs a definitive procedures for complete cure. So definitive surgical treatments are done now adays.

Treating anal fistula is a complex task because of anatomical location of disease,recurrence rate, potential risk of septic complications and post operative faecal incontinence. Main objective of surgery is to heal the fistula and minimize the morbidity of disease. Many surgical techniques including fistulectomy, fistulotomy, seton technique, endorectal advancement flap, LIFT, VAAFT, fibringlue and fibrinplug used for treatment of fistula. Eradication of sepsis and maintainence of continence are two great challenges for the success of surgery. Hence ideal decision should be made to choose appropriate surgical technique for treatment of fistula in ano

This study seeks to evaluate types and time trends for treatment of fistula-in-ano

AIMS AND OBJECTIVES

AIMS AND OBJECTIVES

A Prospective and Retrospective analysis of Fistula in ano to identify

1. Incidence in Male, Female
2. Etiology
3. Symptoms
4. Various Surgical Techniques
5. Complications
6. Follow up

Need of the study

- Fistula in Ano develops in 26-38% following Anal Abscess
- The incidence in men 12.3/100000 population
- The incidence in women 5.6/100000 population
- Faecal incontinence, recurrence, discharge-common. Symptoms generally affect quality of life significantly So proper surgical technique is mandatory.
- Surgery is the treatment option with the goals of draining infection, eradicating the fistulous tract, and avoiding persistent or recurrent disease while preserving anal sphincter function.

Aims of the study

- A retrospective and prospective analysis of various surgical treatment modalities in PSG Hospital on Fistula-in-ano
- To analyze the morbidity in patients fulfilling the Inclusion/Exclusion criteria, from admission till 6 months post-operatively.
- To review the pathophysiology of anal fistula
- To review both simple and complex fistulas and treatment options
- To compare and analyse the efficacy and outcomes of all surgical treatment options

REVIEW OF LITERATURE

REVIEW OF LITERATURE

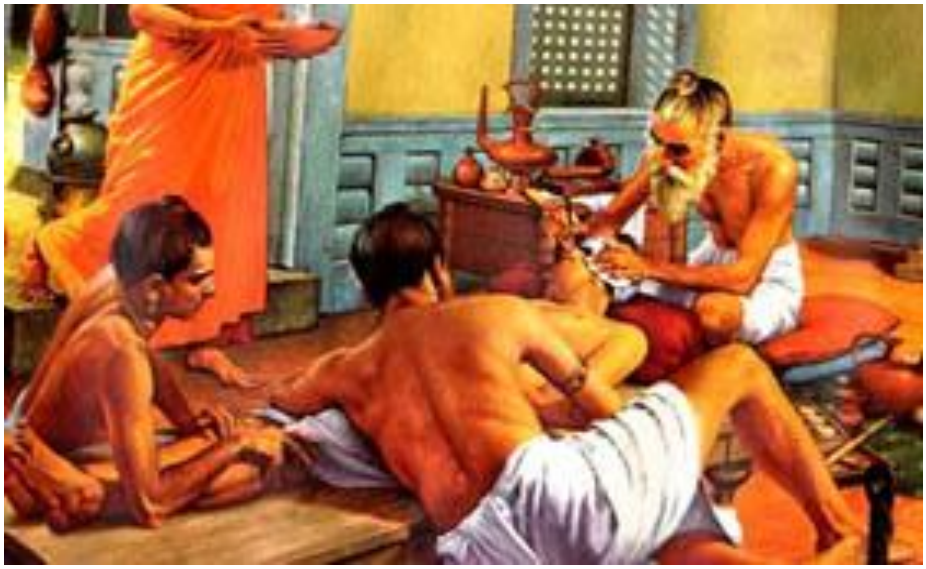
Fistula in ano is one of the earliest known affliction of mankind as evident by its existence which was mentioned in early biblical literature. The treatment of fistula in ano described as early as 220BC.

Hippocrates:

The treatment of fistula in ano was described by Hippocrates in 450BC and described in latin as "*liber de fistulis"***.** He describes clearly the relation between anorectal abscess and fistula. He describes cutting open of the abscess before it suppurates and burst into rectum. Some of the technique used today were already described by Hippocrates before like examining the depth of fistula by probing it. He described the use of cutting seton method. He used a horsehair wrapped around a lint thread which was advanced through the fistula with a tin guide (the 'specillium'). The ends of the seton were then tied around the enclosed sphincter tissue and tightened until fistula tissue become crushed and putrified. It formed the origin of seton technique.

Celsus described the use of setons for treatment of fistula. Fistula in Ano develops 26-38% following anal abscess. Incidence in men is 12.3/100,000 population and in women is 5.6/100,000 population. Male to female ratio

is 1.8:1.fistula in latin means reed or pipe. Goligher define fistula as chronic granulating track connecting two epithelial lined surface. Medicated setons were used much earlier by Sushrutha.



The *Kshar-sutra* was first mentioned by the "Father of Surgery" ***Sushruta*** in the book *" SUSHRUT – SAMHITA"* for the treatment of *Bhagandara* (fistula- in - ano), *Nadi Vrana* (sinus), Arsha (Piles), *Arbuda* (Excision of small benign tumour) etc. Kshar-sutra procedure is one of the most effective para-surgical procedure of Ayurveda. This technique of Ayurveda provides a safe , economical, given 100% result to the variety of all Ano-rectal diseases like Anal Fistula(bhagander), Piles(arsha), Chronic Anal Fissure (Parikartika), Pilo-nidal sinus (nadivrana), Rectal Polyp, Anal Condyloma etc.

-The Ksharsutra means KSHAR + SUTRA

-KSHAR means Alkaline Ayurvedic Medicine

-SUTRA means Thread

It is a medicated thread prepared by 21 coatings of different medicines.

11 coating of SNUHI-KSHEER (latex of Euphorbia Nerrifolia – use as binding agent and having cutting property,) 7 coating of KSHAR (The kshar powder obtained by the burning of various herbs acts as anti microbal action & Cutting properly. 3 coating of Haridra (Turmeric powder) use for healing

The mechanical action of the thread and the chemical action of the drugs coated , collectively do the work of cutting, curetting, draining, and cleaning the Ano-rectal diseases, Thus promoting healing of the wound. This also acts both as the antiseptic and fibrotic agent to induce the healing. The process of healing starts from deeper tissues & travels towards periphery.

Benefits of the ksharsutra

a) The Ksharsutra procedure is performed mostly under Local anaesthesia.

b) The procedure does not require hospitalization for more than 6 to 8 hours or 1 day.

c) The patient requires minimal bed rest & can resume his / her daily routine within 1 to 2 days.

d) It gives freedom from painful dressings.

e) The drugs coated on the Kshar-Sutra are slowly and gradually released into the track and the wound, leaving no pockets overseen. These pockets are drained out by the action of the drugs.

In this process there is no need of dressing , High Anti-Biotic medicine, I / V Fluid & blood transfusion.

f) This therapy successful even when Haemoglobin of patient 3.8 gm/dl %. **(Ref:1-4)**

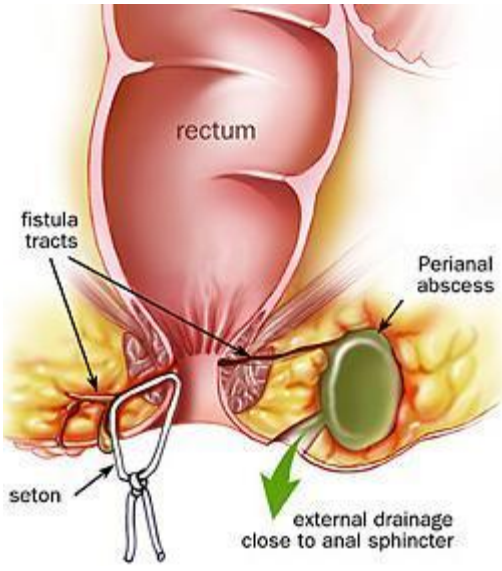
John of Arderne

John Ardene (1307-1390), English surgeon described in early 14th century, the principles and surgical technique used for fistula. He was the first to describe and to use lay open method for treatment of fistula. he wrote the book – "*Treatises of Fistula in Ano, Haemorrhoids and Clysters".* In this book, he described the treatment for fistula in ano.

The patient was placed in a lithotomy position. Four threads were taken through the fistula tract and ends drawn out through the anus. Threads were knotted to stop bleeding. Grooved instrument was pushed inside through the fistula into rectum, where it made contact with another instrument. Intervening segment was removed by him. Bleeding between the ligatures was stopped with a hot sponge. He pioneered in demonstrating the fistula surgical techniques. **(Ref:5)**

King Louis xiv and Charles-Francois Felix de Tassy

Louis xiv developed perianal abscess in 1686. The abscess was lanced but it recurred within 3 months. Surgeon Charles Francois operated him after reading all ancient and contemporary literature about fistula in ano. He developed an instrument "*le bistouri a la royale"*. He operated on the king and Louis xiv recovered from fistula with in a month.



Park in 1961 demonstrated infected analglands and paved way for pathophysiology. Setons used in the treatment of high trans sphincteric and anterior sphincteric fistula in ano. Materials used as setons include prolene, silastic catheter, vessel loops, rubber

bands,vessel loops etc. Two types of setons include cutting which incise the tissue and non cutting that facilitate drainage of tract. Amedicated ayurveda thread called *"kshar sutra"* described by sushrutha, a linen thread soaked in kshar which is a plant extract that has a tissue cutting property. It takes 3 weeks to 1 year to cut through the tissue. Non cutting setons were used in chronic sepsis and chronic diseases like HIV positive cases. Use of seton can be used in staging procedure in combination with fistulotomy. Study done between seton technique and fistulectomy with 63 members. 56 males and 7 females. Mean age group 38.4 years. 31 belong to fistulectomy and 32 in seton group. Mean healing rate is same in both group. But recurrence was about 8% in seton technique,compared to none in fistulectomy group. Incontinence not seen in both groups. **(Ref:6)**

Charles Dickens and Sir Frederic Salmon

In early times, not only the kings suffer of perianal fistula. Charles Dickens (1812-1870) also had a perianal fistula. He was operated by Sir Frederic Salmon on 8th October 1841. In a letter to his friend, he described the procedure as …"*last Friday morning, (I)was obliged to submit to a cruel operation and cutting out root and branch of the disease caused by working over much, which has been gathering it seems for many years.* The operation was successful, hence Dickens felt gratitude to Frederic,

hence he persuaded Lord Iveagh (empire) to start a dispensary for the poor, afflicted with fistula,piles and other diseases of rectum and lower intestine, which was to become the well known St. Marks Hospital, in London. Salmon attributed Dicken's fistula to "*the consequence of too much sitting".* Perianal fistulas are common now adays in persons who are doing specific occupations like tailors.

Fredrick salmon described in 1835, 129 cases operated for fistula and followed up for 5 years. **(Ref:7)**

Sir Hugh Lockhart – Mummery's opinion

In early 20th century, renowned surgeon Hugh Lockhart – Mummery expressed the frustration that many surgeon's encounter in treating perianal fistulas. He described as "*probably more surgical reputations have been damaged by the unsuccessful treatment of fistula than by the excision of the rectum or gastroenterostomy.* Several years later he stated – "*the bad results of laparotomy are generally buried with flowers,while the fistulae go about the world exhibiting the unsuccessful results of the treatment"*

Fistulotomy is the standard treatment for low simple anal fistula, submucosal and low intersphincteric fistula. It is usually used as a single staged procedure but can be used as in complex staged procedure with fistulotomy. Fibrin glue is a mixture of fibrinogen, thrombin and calcium ions which when combined form a soluble clot due to cleavage of fibrinogen to fibrin. This clot seals the fistula tract in 30- 60 seconds. Between days 7 and 14 the tract is replaced by synthesized collagen. The reasons for failure caused by inadequate removal of granulation tissue and abscess formation due to lack of complete tract filling with glue.The advantages of this procedure are that it is a simple procedure without any learning curve. There is no decrease in incontinence level. Fibrin plug is introduced in 2006 by Robb & colleagues. The plug is made up of lypophilized porcine small intestinal submucosa shaped in a conical fashion which increases the mechanical stability thus avoiding dislodgement during straining. The reasons for failure of the plug are improper securing of the plug to the primary opening leading to dislodgement. **(Ref:8-9)**

Fistulotomy is usually done for simple fistula and its the most common procedure done now throughout the world. Healing is better and recurrence is same as with fistulectomy. Its technically easier compared to

fistulectomy. Fistulectomy involves more damage to sphincters when compared to fistulotomy. Fistulotomy procedure is laying open of fistula tract and allow to healing by its own. But fistulectomy involves removing entire fistulous tract including secondary tracts. Disadvantages being sphincter injury. Faecal incontinence usually common in fistulectomy procedure. Fistula will present as acute abscess or as discharging sinus that my cause skin irritation in the perineal region and affects the skin. Induration maybe felt subcutaneously. On doing per rectal examination a nodule can be palpable in the anal canal wall. Primary opening is identified and probe is introduced through the external opening gently and probing is done the Goodsall rule, we can identify the anatomy of fistula. If the internal opening is difficult to identify, then techniques like probing the external opening, usage of methylene blue or hydrogen peroxide is used and planned for definitive procedure. It involves drainage of primary intersphincteric infection, delineate primary track across external sphincter and secondary tracks. But seton placement is preferred when there is presence of anterior fistula and if involves 25 to 50% bulk of sphincter muscles. Close followup , proper post operative care is necessary for proper healing process. Sitz bath and regular dressing mandatory for healing the wound from depth to perianal surface

Multiple fistula tracts have been associated with higher failure rates.

1. Adipose derived stem cells used in treatment of complex anal fistula. On comparision with fibrin glue, the results include recurrence rate of 17% at one year followup. **(Ref:10)**

2.Mucosal Advancement Flap is a sphincter sparing procedure where endorectal/ endoanal flaps are advanced to close the internal ring with or without closure of the tract. Healing rate varies from 77-100%. Recurrence rate was noted to be 23%.**(Ref:11)**

3. Van Koperen and colleagues used the setons to drain the tracts followed by flap advancement with good results. Combining fibrin glue in conjugation with advancement flap in a study conducted by Ellis and Clarke. **(Ref:12)**

4. LIFT procedure is ligation of the inter sphincteric fistula tract . This procedure is based on secure closure of the internal opening and removal of infected cryptoglandular tissue through the intersphincteric approach.The procedure was developed by Thai colorectal surgeon, Arun Rojanasakul, Colorectal Division Department of Surgery, Chulalongkorn University, in Bangkok, Thailand. in 2007. The first report of preliminary

healing result from the procedure were 94% in 2007.It included 18 pts with recurrence rate of 5.6%. Two major differences between LIFT and previously described techniques – ligation of fistulous tract is more secure and removal of infected glandular tissue by curettage is less time consuming and more practical. Bleier done both retrospective and prospective study that included 39 patients, 51.3% of whom were male. Mean age of the study group was 49 years. The average follow-up period was 24 wk. The success rate was 57%. Incontinence was 0%. This was the first study conducted in United states. Shanwani conducted a prospective study that included 45 patients out of which 71% were male. He continued study for 9 months. The success rate was 82.2% and recurrence rate was 17.8%, mean average period of recurrence was 6 months. Healing time was 7 weeks. fecal incontinence was nil in his study. **(Ref:13)**

Surgical techniques of LIFT Procedures

- Identifing the internal opening
- Incision at the intersphincteric groove
- Dissection through intersphincteric plane and identify intersphincteric fistula tract
- Secure ligation of intersphincteric fistula tract

- Remove the fistula tract

- Curette fistula tract from external opening

5. Ellis introduced BioLIFT procedure , using bioprosthetic graft derived from submucosa of porcine small intestine. BioLIFT technique is a variation of the LIFT technique in which a bioprosthetic is kept in the intersphincteric plane which helps in reinforcing the closure of the fistulous tract. The bioprosthetic graft acts as a physical barrier in the intersphincteric plane and facilitates healing process. The technique utilizes transection of the intersphincteric tract and closure of the fistula opening in the internal sphincter, which is similar to the procedure described by Matos, instead of ligating the intersphincteric tract. When compared to the LIFT, this technique has two potential disadvantages. First, it requires extensive dissection in the intersphincteric space because the bioprosthetic graft must overlap the closure of the fistula tract by at least 1 to 2 cm in all dimensions. The second disadvantage is relatively high cost of the bioprosthetic materials, which makes its usage less.

Ellis did a prospective study on 31 patients .success rate was 94% and recurrence was 2%.Mushaya did a randomized control study between LIFT

and ERAF(Endorectal Advancement Flap) and found to have similar success rates. **(Ref:14)**

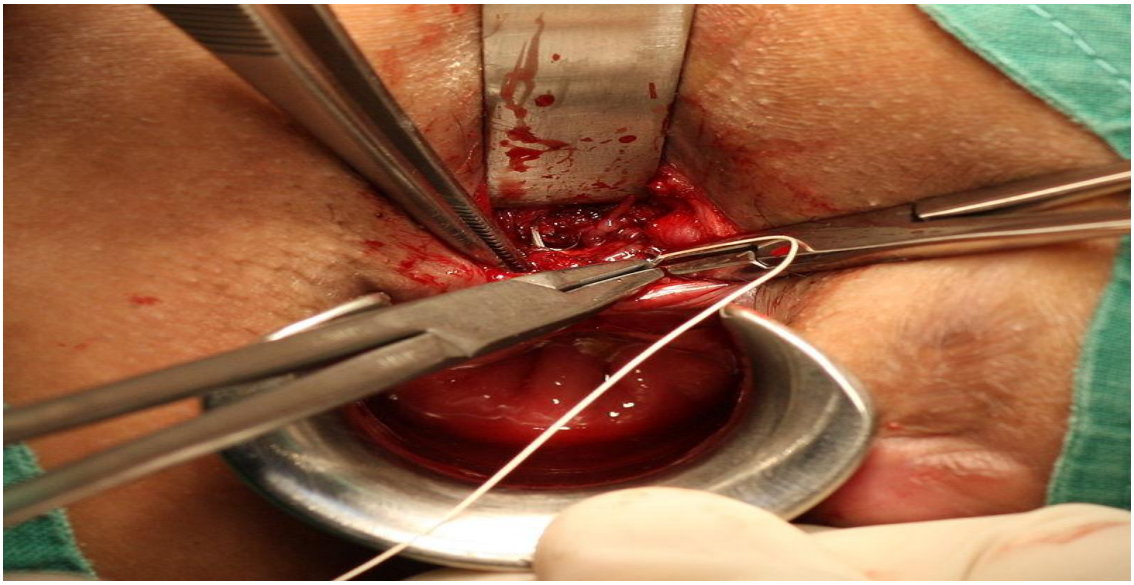
6.Han introduced LIFT – PLUG procedure by introducing bioprosthetic anal plug in fistulous tract. He done study in 21 persons and followed for 14 months and found success rate of 95%Lehmann did LIFT study for recurrent fistula exclusively among 17pts and found to have healing rate of 76% when followed up for 13.5 mnths. **(Ref:15)**

7.Srikurnpiboon compared LIFT PLUS (LIFT WITH PARTIAL FISTULOTOMY). Technique and did a prospective study among 41 pts. Healing rate was found to be 83% and there was no incontinence. **(Ref:16)**

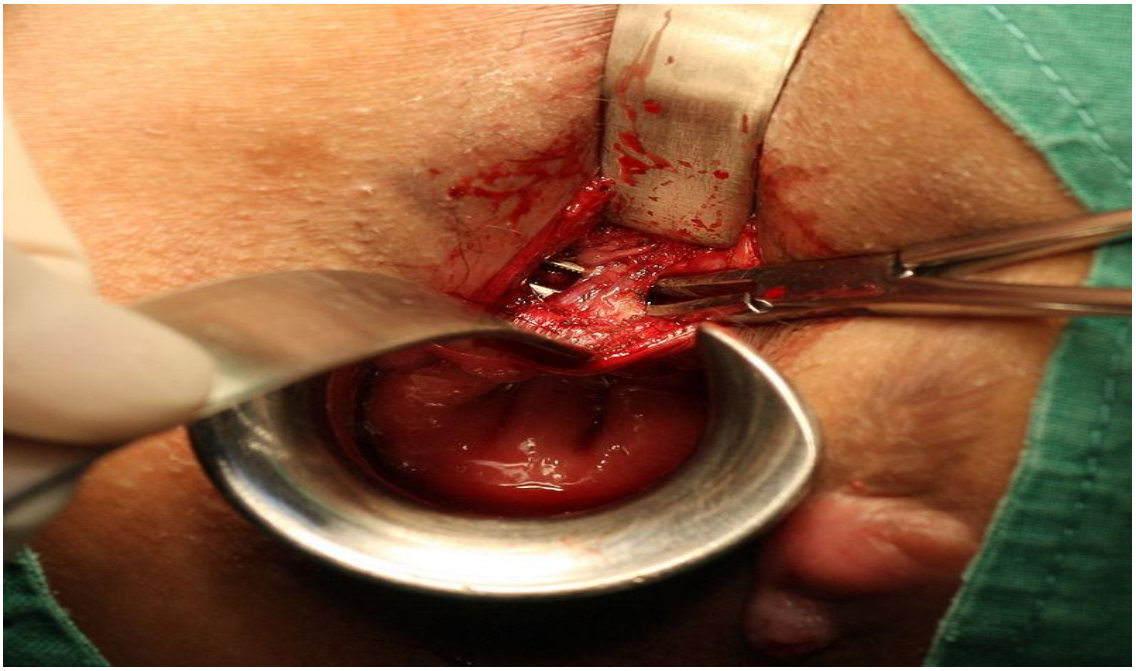
LIFT PROCEDURE

A. Internal opening identification

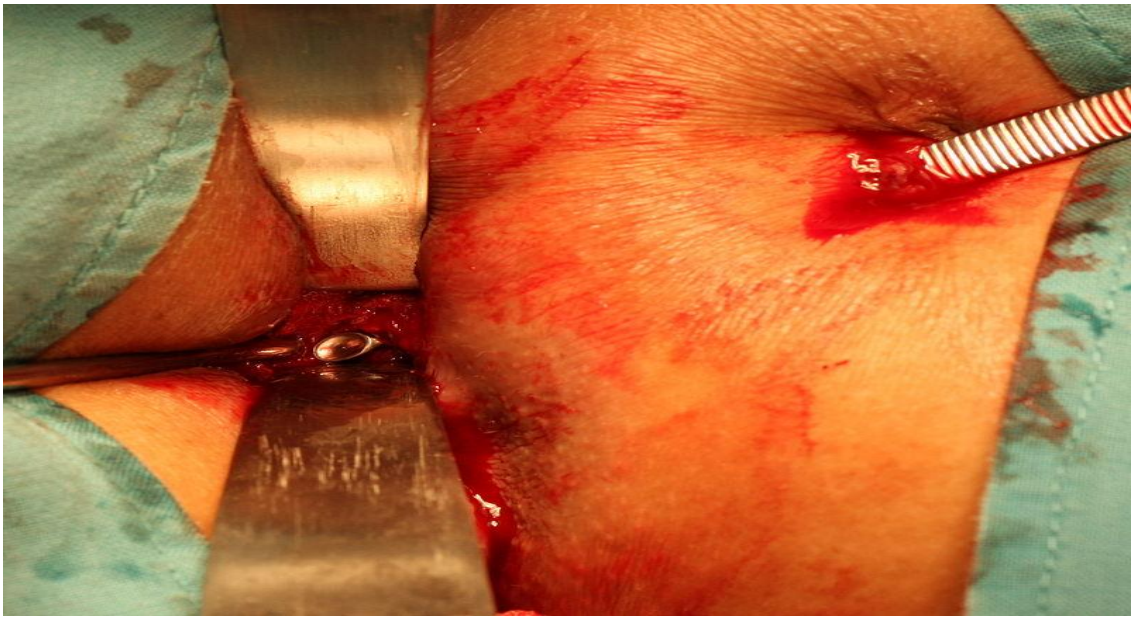
B. Incision made at intersphincteric groove



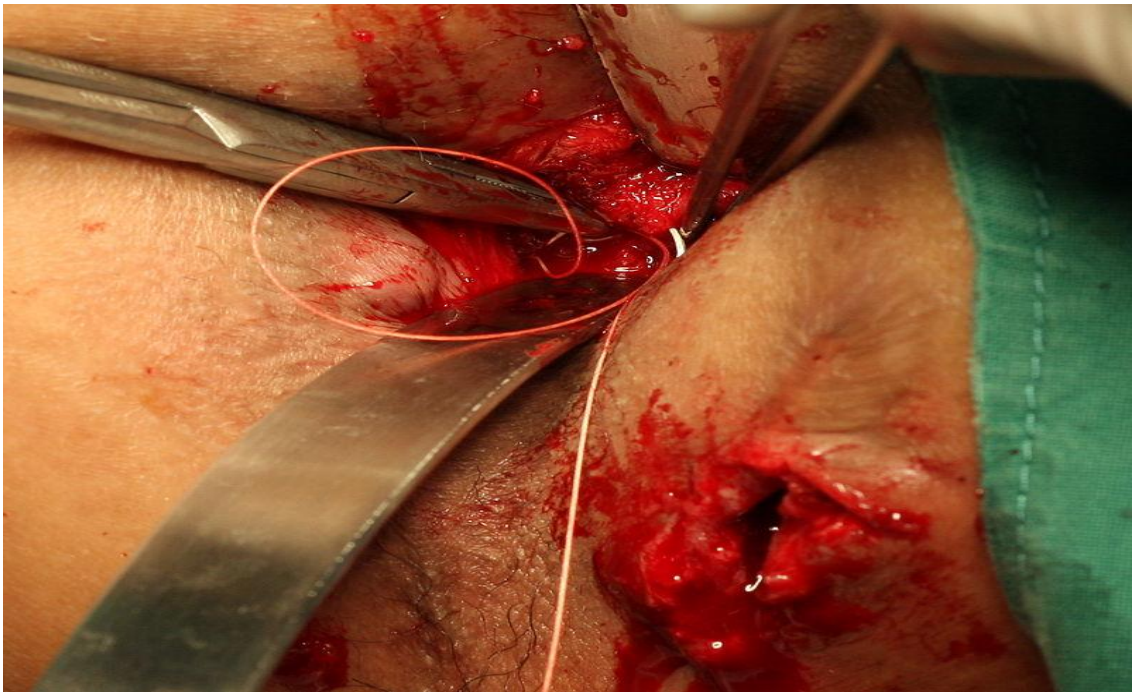
C.Identification of intersphincteric fistula tract



D.Secure ligation of Intersphincteric tract



E.Curetting out through External opening



F.Suture closure of the sphincter Muscle

8.VAAFT(Video Assisted Anal Fistula Treatment)

VAAFT technique is used for treatment of complex fistulas and their recurrences. **(Ref:17).** it involves two phases that includes both diagnostic and operative phases. It involves visualisation and localisation of internal fistula, fistula treatment from inside and internal opening closure. Avoidance of surgical wounds in the perianal region and faecal incontinence is less compared to other procedures because sphincter damages are avoided

The technique involves a Fistuloscope, which energy source usually a unipolar cautery which is connected to a high frequency unit, fistula brush and forceps attached to it. A semicircular or linear stapler also attached to it. 0.5 ml of synthetic cyanoacrylate which is placed in tiny catheter attached to fistuloscope.

The fistuloscope has an optical channel, a working channel and an irrigation channel. Average working length of about 18cm and effective manipulation occurs around 14cm from target site.

FISTULOSCOPE IN VAAFT PROCEDURE

VAAFT TECHNIQUE

The patient positioned in the lithotomy position. Under spinal anaesthesia, The fistuloscope is introduced to the fistulous opening and optimal solution (5000 cc glycine and mannitol 1% solution) is used.

TECHNIQUE OF VAAFT:

1. The diagnostic phase
2. The operative phase

1) THE DIAGNOSTIC PHASE

The diagnostic phase is used in correct localisation of the internal fistula opening. The fistuloscope is entered via the external fistula opening and space is created with washing solution (glycine 1% and mannitol 1%) . it opens the entire fistulous tract including the secondary tract. If the tract is blocked. The tissue which is blocking is removed using 2 mm forceps to facilitate the insertion of the fistuloscope. The direction of the telescope is positioned by the location of obturator and directed according to it. The movements include both slow left-right and up-down movements. The fistuloscope is guided according to transanally placed finger and reached upto the opening under spinal anaesthesia. The continous flow of glycine-mannitol solution facilitates identification of the internal opening. Analcanal is retracted and internal opening is identified by the presence of

light of the telescope which is visualised in the rectum or anal canal. Thus the internal opening is clearly identified. When the opening is reached, the rectal mucosa can be visualised on the screen. If the internal opening is narrowed or if it is not viewed properly, then the rectal mucosa behind the light of fistuloscope is marked and suture stitches taken opposite direction of the internal opening and used as a guide and to perform the procedure. Then fistula is operated from within and started from internal opening to exterior aspect.

2) THE OPERATIVE PHASE

The entire fistula is destroyed from inside using fistuloscope. Fistulous opening is closed and entire tract is destroyed from inside. The fistula canal is washed and waste debri is removed and the internal opening of fistula is closed completely and then fistula is destroyed . The procedure is carried out under vision using a unipolar electrode which is introduced with the help of the operative channel of the fistuloscope and is connected to the electrosurgical power source. The procedure is started by coagulating all fragments of the whitish material from the fistulous tract which is adherent to the fistula wall and all granulation tissue removed from the path. The movement is usually from inside to outside in a slow, steady manner and necrotic material removed completely. The process is

facilitated by using fistula brush. Entire debri removed.remove the fistuloscope. The internal opening is lifted using forceps about 2cm and stapler is inserted through the base. Then mechanical cutting and suturing done using stapler. Hermetic closure of the internal fistula opening can be accomplished using a linear stapler. when semicircular stapler is used, the suture will be horizontal. If the linear stapler is used, the suture will be vertical. Cutaneous mucosal flap is raised if the internal opening is rigid and sclerotic and the passage of stapler is difficult. Hence fistulous tract removed completely. The procedure involves high expertise to do the procedure. Then synthetic cyanoacrylate is instilled inside to reinforce suture. Entire procedure is carried under vision. Fistulous opening is open to allow the secretions to drain completely.

The benefits of the procedure includes a perfect excision and a hermetic closure of the internal fistula opening. Secure closure is maintained to prevent the risk of stool passage. Due to the tangential placement of sphincter, postoperative pain is reduced very much and it also facilitates healing easily.

The advantages of the VAAFT technique includes no surgical wounds in the buttocks or perianal region, perfect localisation of the internal opening is possible under direct vision and removal of fistula completely from the

inside. There is no need to classify the fistula as trans sphincteric, extrasphincteric or high anal fistula, as the procedure is carried out from inside and no damage is caused to the sphincters. There is reduced risk of post operative faecal incontinence, pain, no medications and resuming work easily.

9. EXPANDED ADIPOSE-DERIVED STEM CELLS (ASCs)

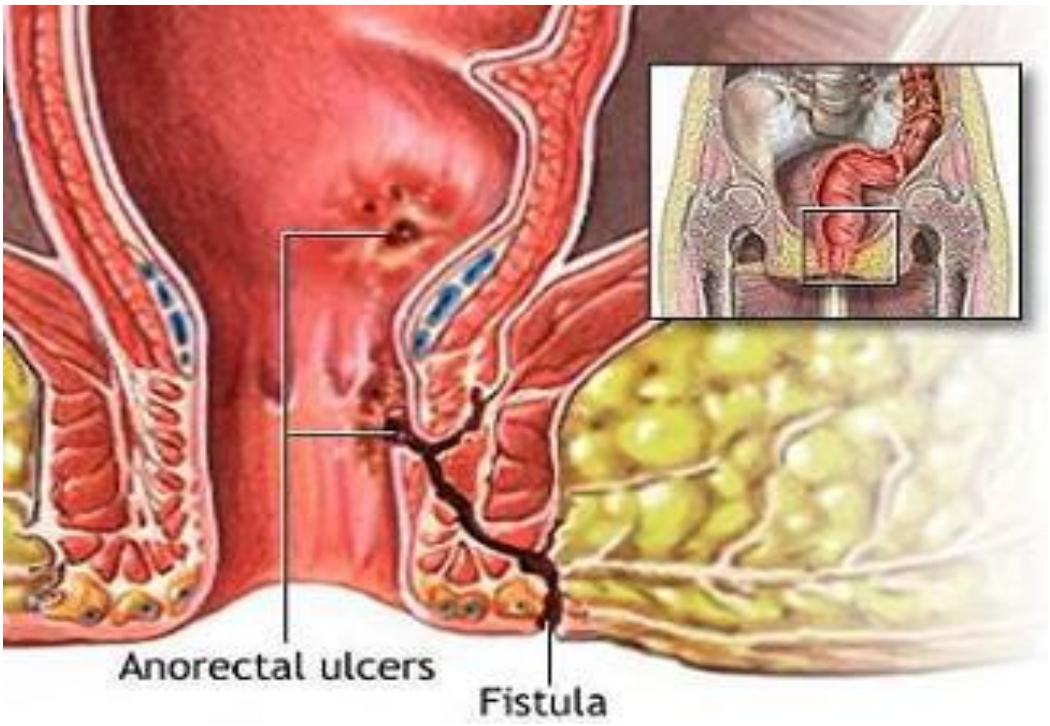
Mesenchymal adult stem cells derived from adipose tissue, can be differentiated into various types of cell. First described by Garcia-Olmo. Adipose tissue is used as the source of stem cells because of two biological properties:. the ability of the tissue to suppress inflammation and the grade of differentiation potential. Fat tissues are obtained by procedures like liposuction, and the fat cells derived can be harvested without adverse effects on the patient. Adipose-derived stem cells are safe for the treatment of a fistula in diseases like Crohn's and also used in the treatment of complex anal fistulae. Randomised control trials were conducted and they proved ASC more beneficial when compared to fibrin plug. The treatment using ASC involves: 1) identification of tract and its internal opening; 2) curetting the fistulous tract, lying on the intersphincteric plane; 3) closing the internal opening of the fistulous tract; 4) injecting cell suspension into the fistulous opening through a long fine needle and identifying entire

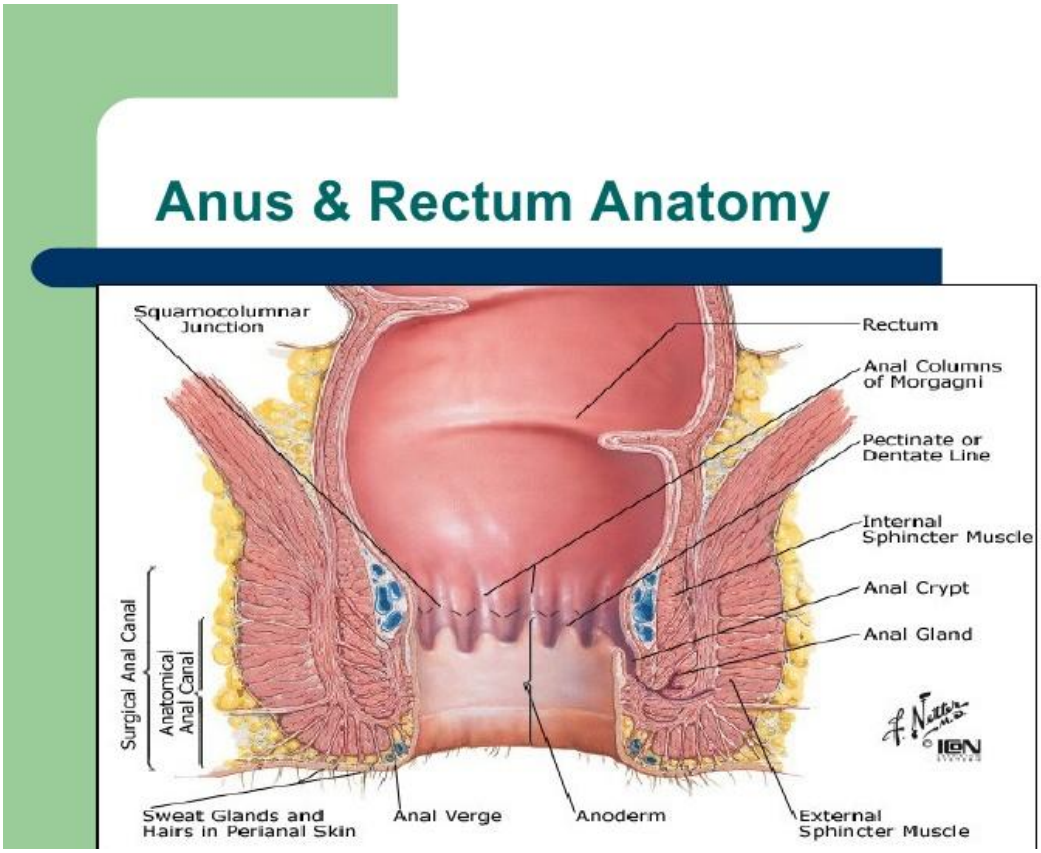
course; 5) followed by sealing the tract with fibrin glue. Studies conducted revealed healing rate is better when treated with ASC and fibrin glue, rather using fibrin plug alone. ($P < 0.001$). Studies further revealed healing rate was similar between the Crohn's and the non-Crohn's patients who underwent the procedure.

An advantage of using adipose derived stem cells for treating anal fistula is no resection of the tract and no involvement of anal sphincter. The limitations of using ASCs-based therapy includes the cost of treatment which is very high compared to other procedures. Secondly, technique involves secure closure of the internal opening and injection of the cell suspension over the tract completely involves technical difficulty. It limits the usage of ASC from extensive usage.

ANORECTAL ANATOMY AND PHYSIOLOGY

FISTULA IN ANO





ANORECTAL ANATOMY AND PHYSIOLOGY

Anal canal extends from anus to rectal ampulla and it is 2-5cms in length, shorter in women than in men. Its lower part is lined by stratified squamous epithelium. The dentate or pectinate line is situated in the middle of the canal and is defined by anal valves. The anal glands open into the crypts above the valves and can be situated in the submucosa and reach through the internal sphincter into intersphincteric space. At the dentate line, epithelium becomes transitional. The anal transitional zone with modified columnar epithelium has a high sensory innervations and play a role in continence and normal defaecation.

The anal canal lined by sphincter muscles. The smooth internal sphincter consist of thickened circular muscle layer of the bowel wall. The circular external sphincter merges with puborectalis above, which forms a sling behind uppermost part of analcanal and attaches forward to pubic bones. The puborectalis is the lowermost part of funnel shaped levator ani muscles, which separate perineum from pelvic cavity

Anal continence depends on several mechanisms. The internal sphincter is estimated to contribute 52 to 85% of the resting pressure in the high pressure zone of anal canal (GORDON & NIVATVONGS – 1999). The external sphincter is unique compared to other striated muscle as it has

continuous tonic activity even at rest. The basal tone varies with postural changes and activity increases with increased abdominal pressure and rectal distension. **(Ref:18-20)**

CLASSIFICATION OF FISTULA IN ANO.

- Classification of fistula in ano is based on the anatomy of the course of the fistulous tract which is based on relation to the analsphincter complex. Milligan & Morgan in 1934 classified the fistulas into high fistulas-those in which the internal opening lies above the anorectal ring and low fistulas-those in which the internal opening lies below the anorectal ring.
- Low level fistula includes subcutaneous type,submucosal type and low anal type.
- High level fistula includes high anal type and pelvirectal type.
- Park classified the fistulas into sub-mucosal, intersphincteric, supra-sphincteric and extra-sphincteric.
- The submucosal fistula is not involving any sphincter and is simplest to manage.
- Intersphincteric fistula traverses through the internal sphincter which constitutes about 70% of all anal fistula

- Trans sphincteric fistulas pass through both the internal and external sphincters and are further subdivided into low and high depending on the part of the external sphincter muscle. The low fistulas involve only the outer part of the external sphincter while high fistulas involve greater part of the external sphincter. It constitutes about 25% of all anal fistula
- Supra sphincteric fistula typically arise at the dentate line internally, cross above the internal sphincter but below the puborectalis and exit on to the peritoneal site.
- Extra sphincteric fistula are rare and do not involve the sphincter complex. They arise from above the denatate line into the ischio-rectal fossa. These are non cryptogenic in nature.
- The drawback of this classification is need for classification oriented investigations in form of transrectal ultrasound or Magnetic resonance imaging of perineum.

Fistula is now classified as

1) subcutaneous

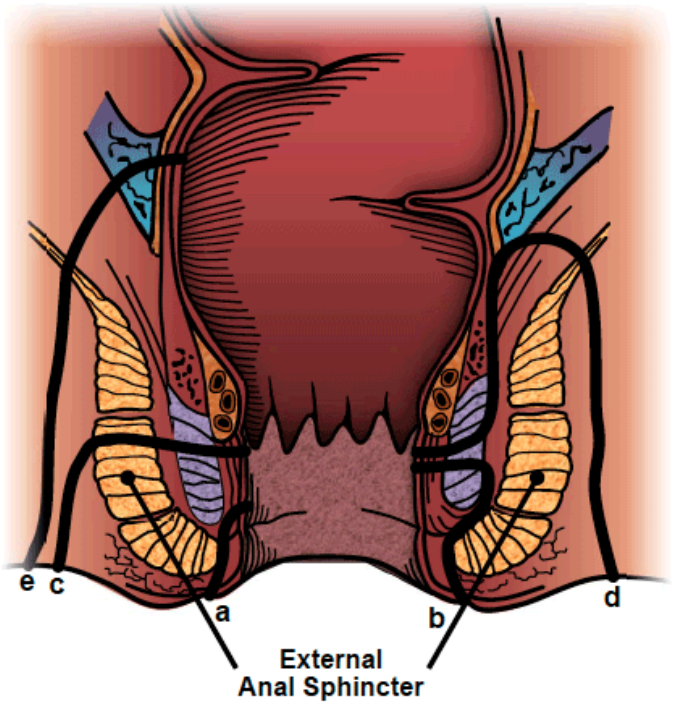
2) sub muscular (intersphincteric, low transsphincteric)

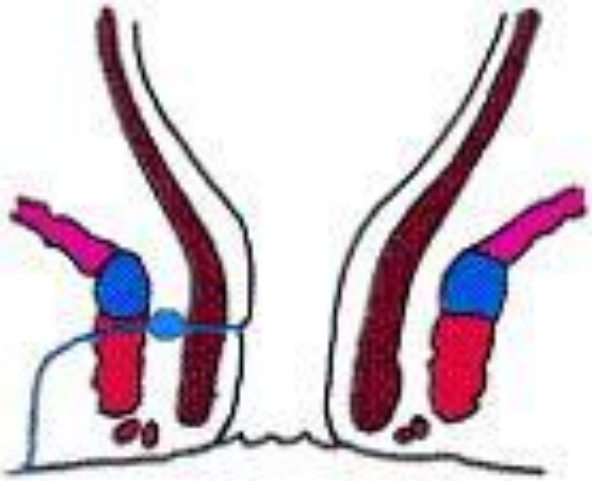
3) complex,recurrent(hightranssphincteric, suprasphincteric,extrasphincteric,multiple tracts,recurrent)

4) second stage

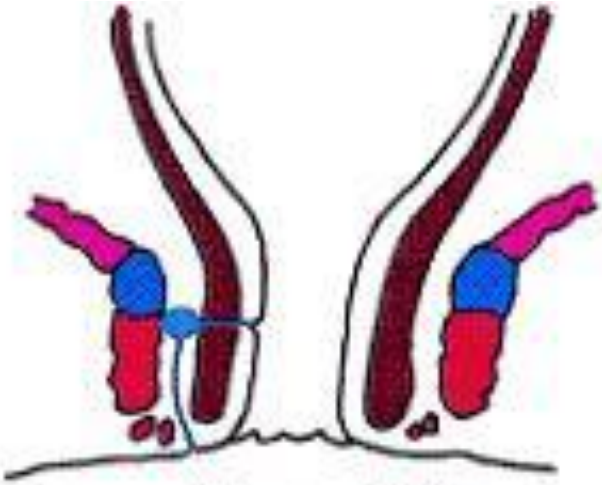
Unlike the present coding, park's system doesn't include subcutaneous fistula. These fistulas are not of cryptoglandular in origin but are usually caused by unhealed anal fissures or anorectal procedures, such as hemorrhoidectomy or sphincterotomy **(Ref:21-22)s**

a: superficial fistula
b: intersphincteric fistula
c: transsphincteric fistula
d: supraspincteric fistula
e: extrasphincteric fistula

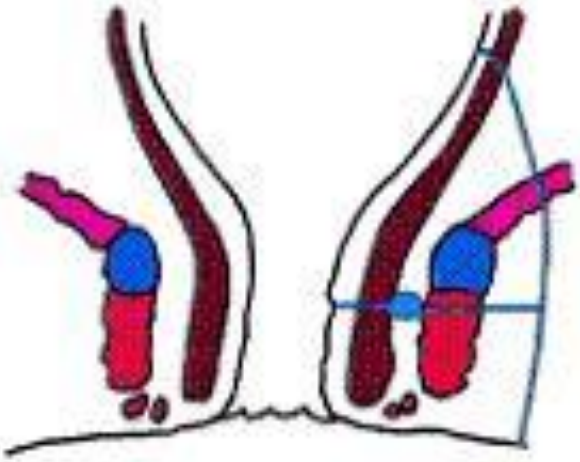




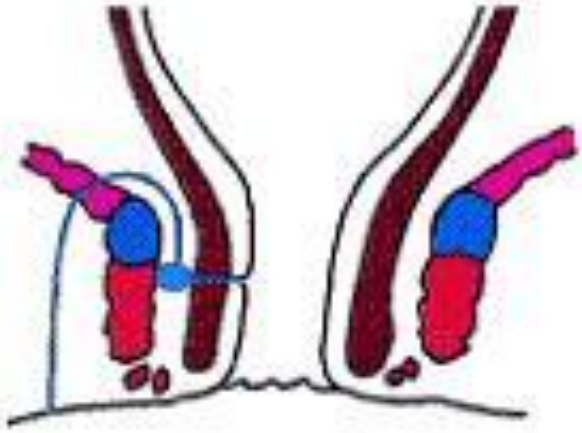
Transsphincteric Fistula



Intersphincteric Fistula



Extrasphincteric Fistula



Suprasphincteric Fistula

PATHOPHYSIOLOGY

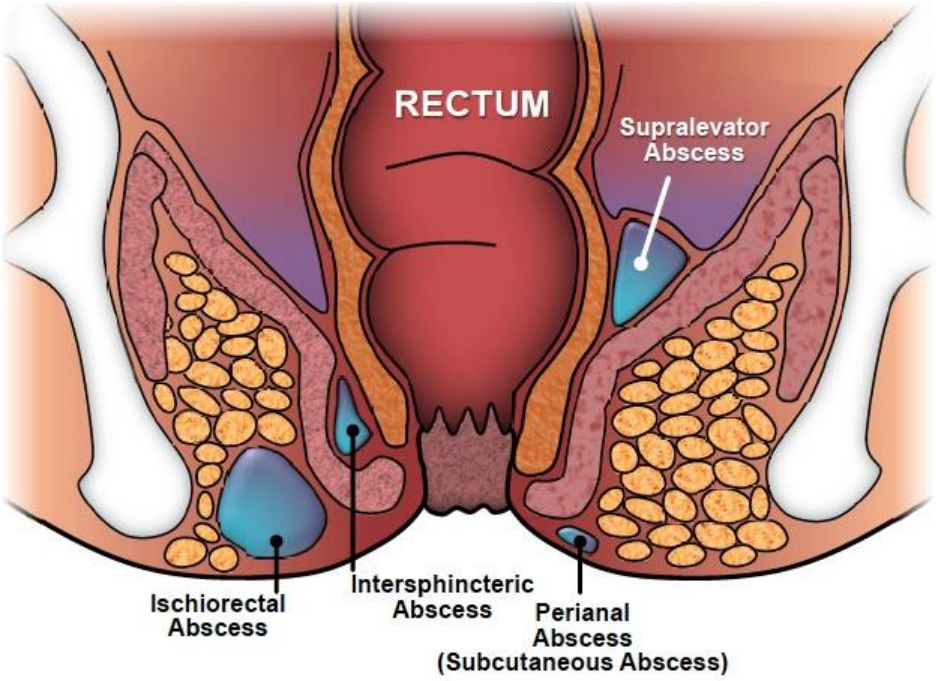
PATHOPHYSIOLOGY

Cryptoglandular theory is the accepted theory. Fistula in ano develops from infected glandular tissue. It results in perianal abscess and fistula formation. of the perineal sepsis and anal fistulas.

The obstruction of anal crypt gland with internal debris leads to infection in these glands,which penetrate, into the anal complex and it causes abscess formation.Abscess collects in anatomical spaces where the anal gland terminates and it transverse to the perineal spaces.

Anorectal abscess is an acute manifestation of the crypto-glandular infection and fistula is a chronic sequelae of this infection. Almost one third of the patients who undergo drainage of the Anorectal abscess develop the anal fistula. In recurrent perineal abscess, presence of anal fistula should be investigated and treated accordingly.

In 10%of the patients, causes include inflammatory bowel disease,fungal infection, tubercular infection, neoplasm or trauma. Complex fistula requires a staged procedure for the management. **(Ref:23-24)**

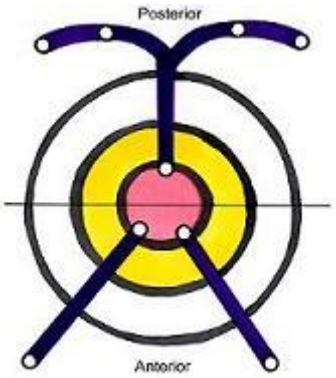


PHYSICAL EXAMINATION AND IMAGING STUDIES:

No specific lab investigations required for fistula in ano. Diagnosis mainly based on physical examination. Examiner should observe entire perineum, should look for external opening which appears as a sinus or elevation of granulation tissue. spontaneous discharge of pus or blood via external opening may be seen.

GOODSALL'S RULE:

Early in the 20th century, Goodsall proposed a tendency in relationship between the location of external and internal openings of perianal fistulas.



1) if the external opening is located posterior aspect,the fistula originates from dorsal midline

2) if the external opening is anterior,it probably runs directly into nearest crypt. If the distance to the anal verge is more than 3 cms,(on either side of the tract),the tract is likely to run in a curved tract to the posterior commissure.

This is commonly known as Goodsall's rule.

Prospective study conducted by Cirocco and Reilly in 216 patients in perianal fistula of cryptoglandular origin. Goodsall's rule found to be

accurate in only 50% of patients. So reliability of this rule is still been in controversy. **(Ref:25-26)**

Digital rectal examination:

It reveals a fibrous tract or cord beneath the skin. lateral or posterior induration suggests deep postanal or ischiorectal extension

We should look for sphincter tone,relationship between fistulous tract and anorectal ring. It provides an indication of the quality of sphincter complex, by assessing sphincter tone.

Eckhardt and co workers have shown sensitivity and specificity in assessing anal sphincter competence in only 63 and 57% of people.

Anoscopy required to identify internal opening. Proctoscopy is indicated in presence of rectal diseases such as crohn's or associated conditions.

Probing:

Route of perianal fistula can be identified by introducing a probe into the external opening. But now probing is not usually done . Risk of developing a false passage is high in case of probing.

Injection of methylene blue:

Preoperative injection of diluted solution of methylene blue into the external opening helps in localizing the internal opening. It may results in staining of tissues.

Injection of hydrogen peroxide is seems to be a good alternative for methylene blue. Hydrogen peroxide does not stain the operating field and can often be helpful in identifying internal anal opening.

Imaging studies are not performed usually for routine fistula evaluation. Indicated in recurrent disease, multiple fistulas, difficulty to identify primary opening or secondary tracts

Following imaging studies can be done :

1) fistulography:

Involves injection of iv contrast via the internal opening followed by anteroposterior,lateral and oblique radiographic images to outline course of tract.

Until early ninetees, perioperative classification of fistula,mainly based on inspection, digital examination, probing and fistulography.

Reserved mainly for cases there is suspicion of communication between rectum and neighbouring organs

False negative and false positive respectively noted about 64 and 8% of cases. Kujjpers done a retrospective study and showed prediction of internal opening via fistulography is only 28%. Ahlback and coworkers used special balloon catheter to demarcate upper and lower boundary of the canal. Using the catheter, they able to localize in only 72% of the patients. Weisman conducted a retrospective study in 27 patients and showed correct classification of fistula in about 89% of patients. **(Ref:27-28)**

2) Endorectal USG:

Passage of 7 or 10 MHz transducer into analcanal to help in defining muscular anatomy differentiating intersphincteric from transsphincteric type. Water filled transducer helps to evaluate rectal wall for suprasphincteric extension. Addition of hydrogen peroxide via the external opening helps to outline entire fistula course.

Graf and Eberhard performed preoperative endoanal sonography in 35 patients with perianal fistula and found to localize the internal opening in 17 patients. Deen and colleagues able to classify perianal fistula in about

60%of people. In 1993, Cheong suggested the accuracy of preoperative classification of perianal fistula using endosonography can be improved by using hydrogen peroxide. In a retrospective study including 37 patients, able to identify in about 92% of patients using hydrogen peroxide. Hydrogen peroxide causes passing sensation of patient, not burden to patients. It is not used in patients with closed external opening. But its usage has increase the accuracy of endosonography in detection of analfistulas.

An extension or abscess was defined as a hypoechogenic structure distinguishable from primary tract

The anatomy of the fistula described as

1) presence of a primary tract-superficial,suprasphincteric,extrasphincteric and transsphincteric

2) presence of internal opening- **(Ref:31-34)**

3) MRI:

MRI scans show 80-90% concordance with operative findings when primary tract course and secondary extensions observed. Investigation of choice for complex fistula and recurrent fistula. **(Ref:35-36)**

MRI clearly identifies sphincter complex, levator plate, and the ischiorectal fossae. It shows fistulous tracks, inflammation, and abscesses with regions of low to intermediate signal intensity, but it cant be distinguished from normal structures like sphincters and levator ani muscles. On T2-weighted and STIR images, clearly define pathologic processes like fistulas, secondary fistulous tracks, and fluid collections from normal structures. It appears as areas of high signal intensity in contrast with the lower signal intensity of sphincters, muscles, and fat (especially on STIR images). STIR imaging has certain limitations in delineating structures. In some cases, STIR imaging failed to demonstrate secondary tracks, as it wont reveal small residual abscesses with edematous inflammatory change. MRI plays a vital role in finding complex fistulas. It helps in identifying all secondary tracks. In recurrent fistulas, MRI plays a major role in treating the patients.

MRI grading of perianal fistulas:

Grade 1: simple linear intersphincteric fistula

Grade 2 : intersphincteric fistula with abscess or secondary tracks

Grade 3 : trans sphincteric fistula

Grade 4 : trans sphincteric fistula with abscess or secondary tract within the ischiorectal fossa

Grade 5 : supralevator and translevator disease

If the ischioanal and ischiorectal fossae are not affected, then disease process is confined to sphincteric complex

If there is presence of track or abscess in ischiorectal fossa, then it is confined to complex perianal fistula, usually grade 3 or 4 trans sphincteric fistula. If the track crosses levator plate, translevator fistula (grade 5) is present. Hence MRI acts as a diagnostic role in anal fistula.

4) CT scan

Used in perirectal inflammatory disease. Better in delineating fluid pockets that require drainage than for small fistulas **(Ref:29)**

CT fistulogram plays an important role in diagnosis of perianal fistula.

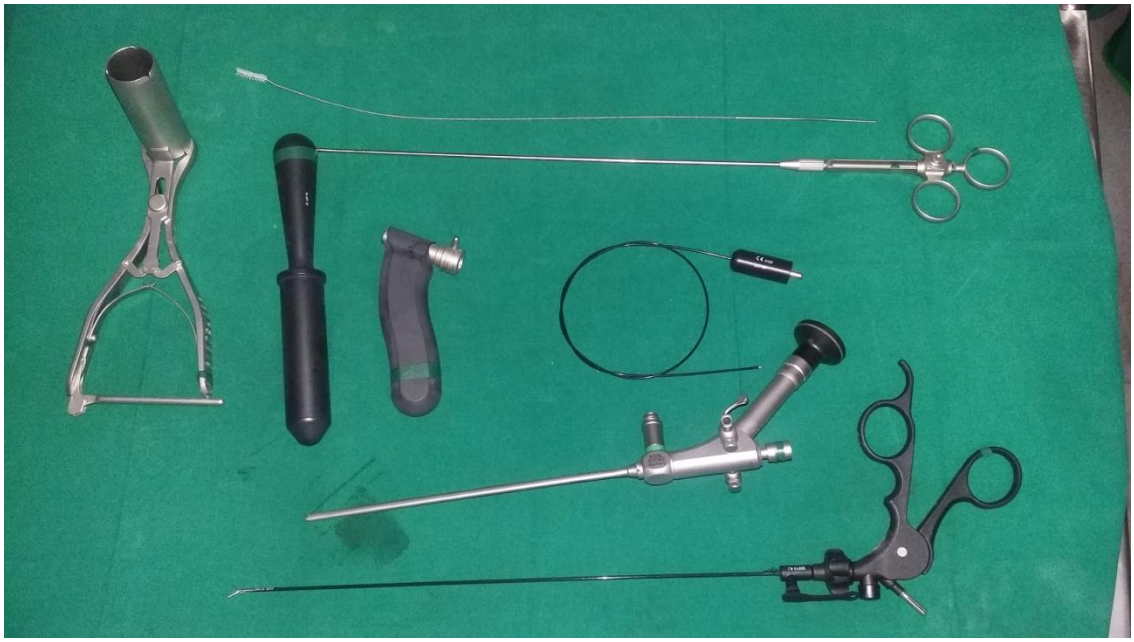
Preoperative period, CT fistulography is used for the identification of the internal and external openings and latent ramifications,which cant be made out clinically. By 3D images, an internal opening which is in continuous with one or more external openings by the VR technique. Addition information regarding, latent ramifications can be easily identified by CT

fistulogram by relative more images. Major disadvantage on using CT fistulography is difficulty in identification of secondary ramification or primary tract which when obstructed with debris. Contrast material will not be filling the tract when filled with debri which makes it difficult to identify. Other disadvantage is that procedure depends on the existence of an external opening.. If the internal opening is not identified or contrast is not filling the fistulous tract, then MRI is used for identification of fistula

5) Barium study

Indicated only in multiple fistulas or recurrent disease – to rule out inflammatory bowel disease **(Ref:30)**

INSTRUMENTS



Materials and Methods

MATERIALS AND METHODS

Type of Study : Retrospective & prospective study

Period of study : Jan 2014 to June 2015

Place of Study : PSG Hospitals, PSG IMS&R, Coimbatore, Tamilnadu. 641004

Sample Size : 75 Cases

This study had been approved by the Institutional Ethical Committee.

Plan of Study :

The detailed case history, clinical examination, Type of surgery, duration of stay, complication of the cases per recorded.

The following factors were compared for newer and older surgical techniques

- anaesthesia, technique and operative care

- duration of surgery

- intra operative complications

- post operative complications – pain, discharge, bleeding, fecal incontinence

- length of hospital stay

- cost effectiveness

- postop readmission

- recurrence

INCLUSION CRITERIA

- All types of fistula – both high and low

- Both male and female patients

EXCLUSION CRITERIA

- Medical and surgical contraindications to spinal anaesthesia

- Severe comorbidities

- Superficial fistula

- Complex fistula due to the following causes

    a) inflammatory bowel disease

    b) previous radiation therapy

    c) Tuberculosis

    d) steroid

    e) HIV

    f) Diverticulitis

Results

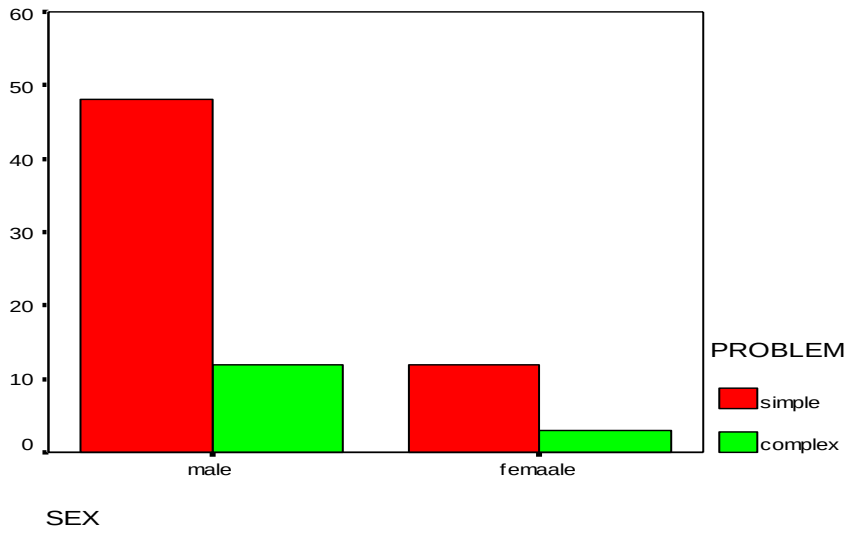
OBSERVATION AND RESULTS

In our study total 75 cases who underwent fistula surgery were taken Results were analysed according to

1. age
2. sex
3. Type of Fistula
4. Complaints
5. Previous Surgery
6. Interval between previous surgery and fistula
7. Co morbidities
8. Type of surgery
9. Duration of Hospital stay
10. Complications

Sex and Age Wise Classification

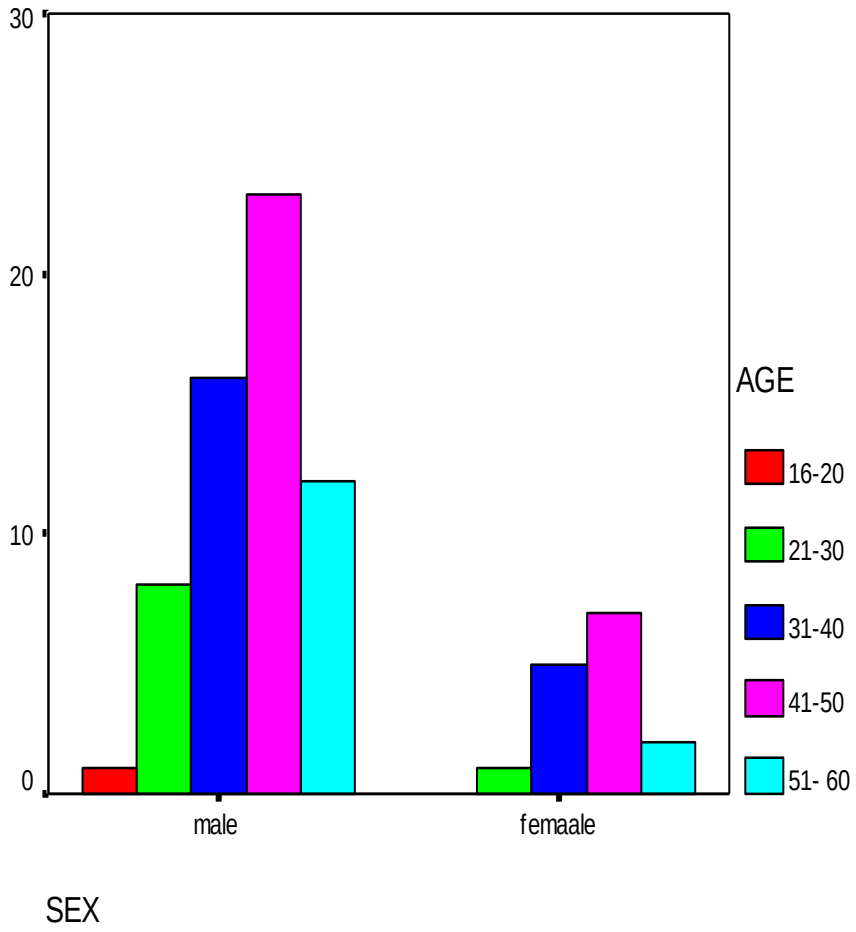
			PROBLEM		
			simple	complex	Total
SEX	Male		48	12	60
			64.0%	16.0%	80.0%
	Female		12	3	15
			16.0%	4.0%	20.0%
Total			60	15	75
		Total	80.0%	20.0%	100.0%



About 80% of fistulas operated were simple. 20% - complex fistulas.

Sex and Age Wise Classification

			AGE					
			16-20	21-30	31-40	41-50	51- 60	Total
SEX	Male		1	8	16	23	12	60
			1.3%	10.7%	21.3%	30.7%	16.0%	80.0%
	Female		0	1	5	7	2	15
			.0%	1.3%	6.7%	9.3%	2.7%	20.0%
Total			1	9	21	30	14	75
			1.3%	12.0%	28.0%	40.0%	18.7%	100.0%



In our study, 80% of patients were male and majority of patients were in age group

Majority of patients were in age group 30-50 years of age.

Sex and Procedure Cross tabulation

		PROCEDURE					Total
		Fistulectomy	Fistulotomy	VAAFT	LIFT	SETON	
SEX	Male	30	20	5	3	2	60
		40.0%	26.7%	6.7%	4.0%	2.7%	80.0%
	female	8	5	0	2	0	15
		10.7%	6.7%	.0%	2.7%	.0%	20.0%
	Total	38	25	5	5	2	75
		50.7%	33.3%	6.7%	6.7%	2.7%	100.0%

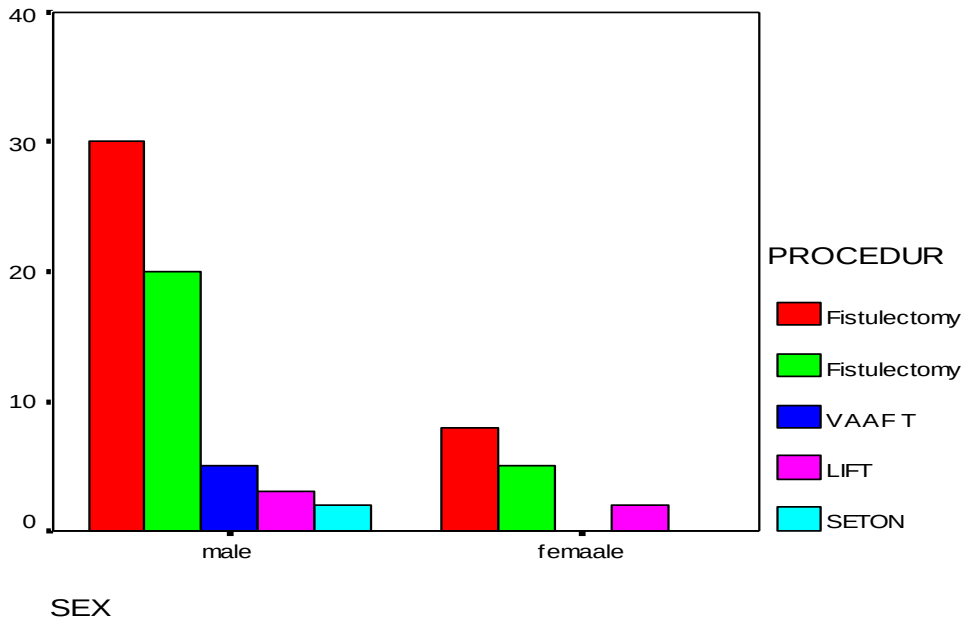
In order to test the significant difference among sample chi square test applied. For this hypothesis as mentioned below is developed.

Ho: There is no significant difference between male and female samples regarding procedure wise classification.

H1: There is significant difference between male and female samples regarding procedure wise classification.

From the output, Chi – square test value = 13.025

The P value is in this cases is .553 which is higher than the 0.05 (5 percent level of significant). So there is much evidence to reject the null hypothesis at 5 percent level of significance. Therefore alternative hypothesis has been accepted. It seems that there is a significant difference between male and female sample regarding procedure wise classification are not equal.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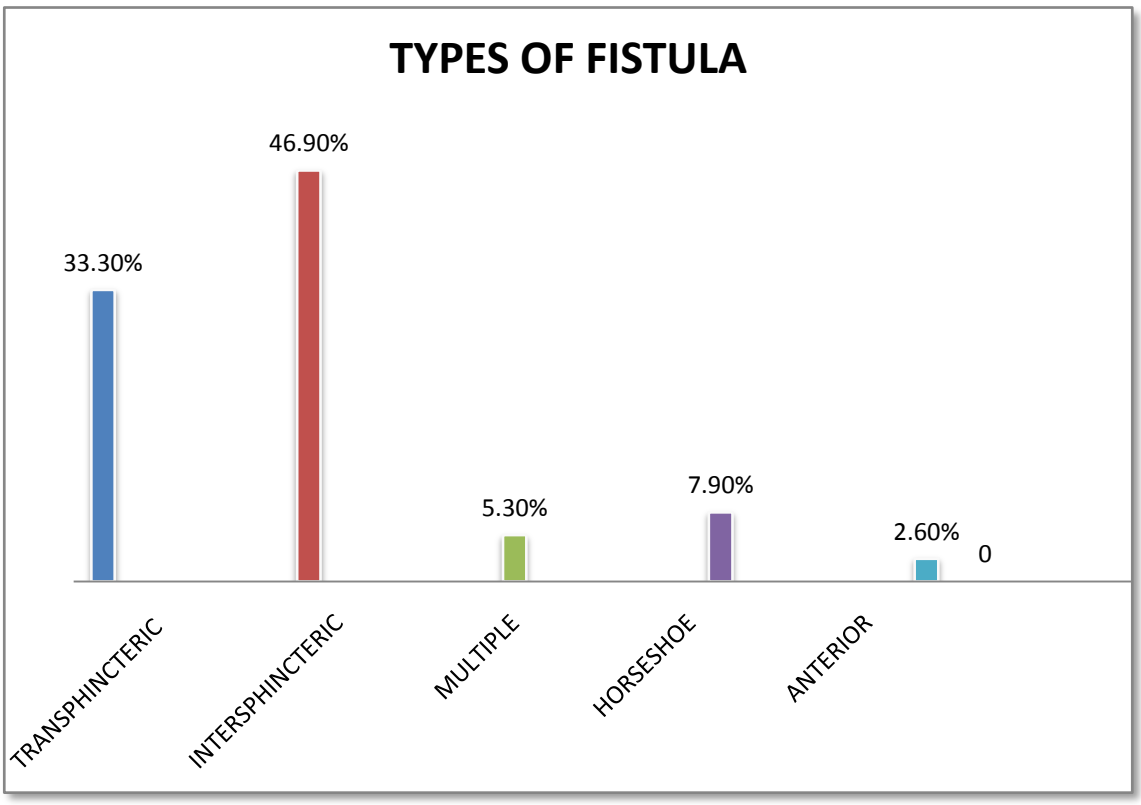
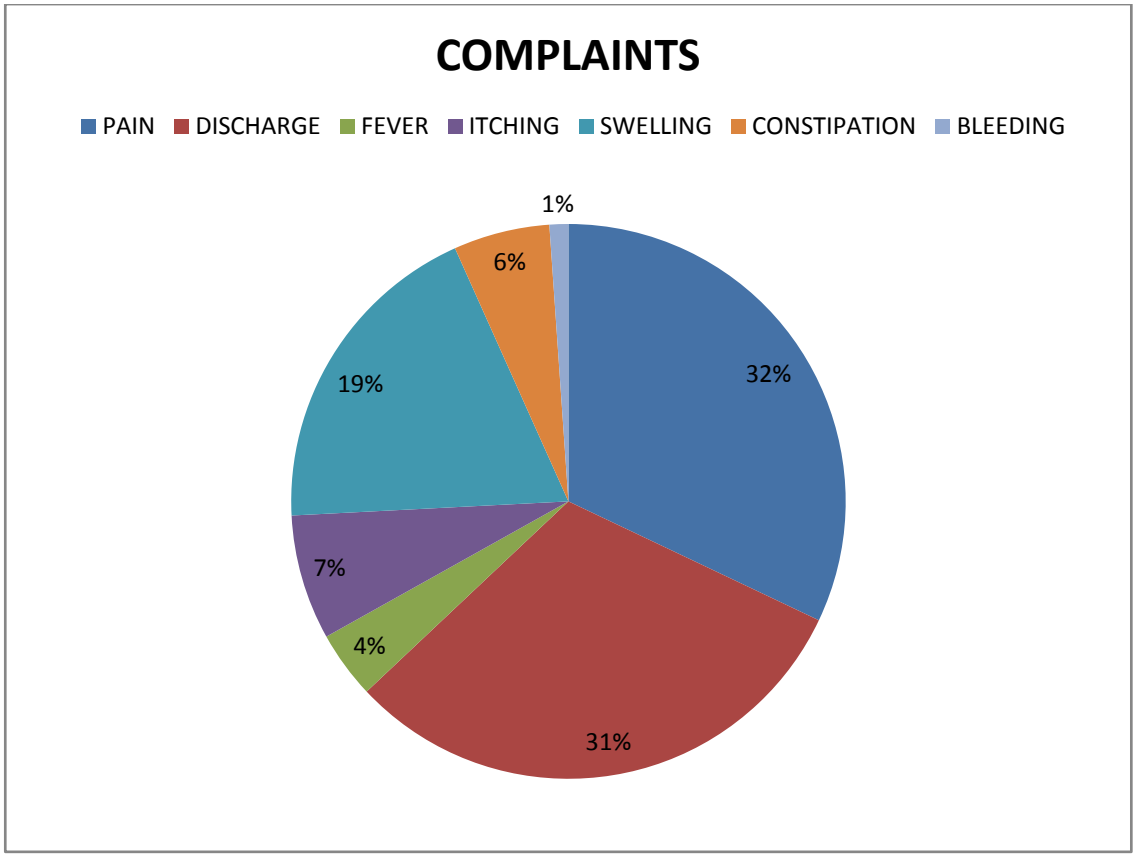
LIFT
SETON


TYPES OF FISTULA
33.30%
46.90%
5.30%
7.90%
2.60%
0
TRANSPHINCTERIC
INTERSPHINCTERIC
MULTIPLE
HORSESHOE
ANTERIOR

ANALYSIS OF FISTULA IN ANO

COMPLIANTS:

PAIN	-	76%
DISCHARGE	-	73.3%
FEVER	-	9.3%
ITCHING	-	17.3%
SWELLING	-	45.3%
CONSTIPATION	-	13.3%
BLEEDING	-	2.6%

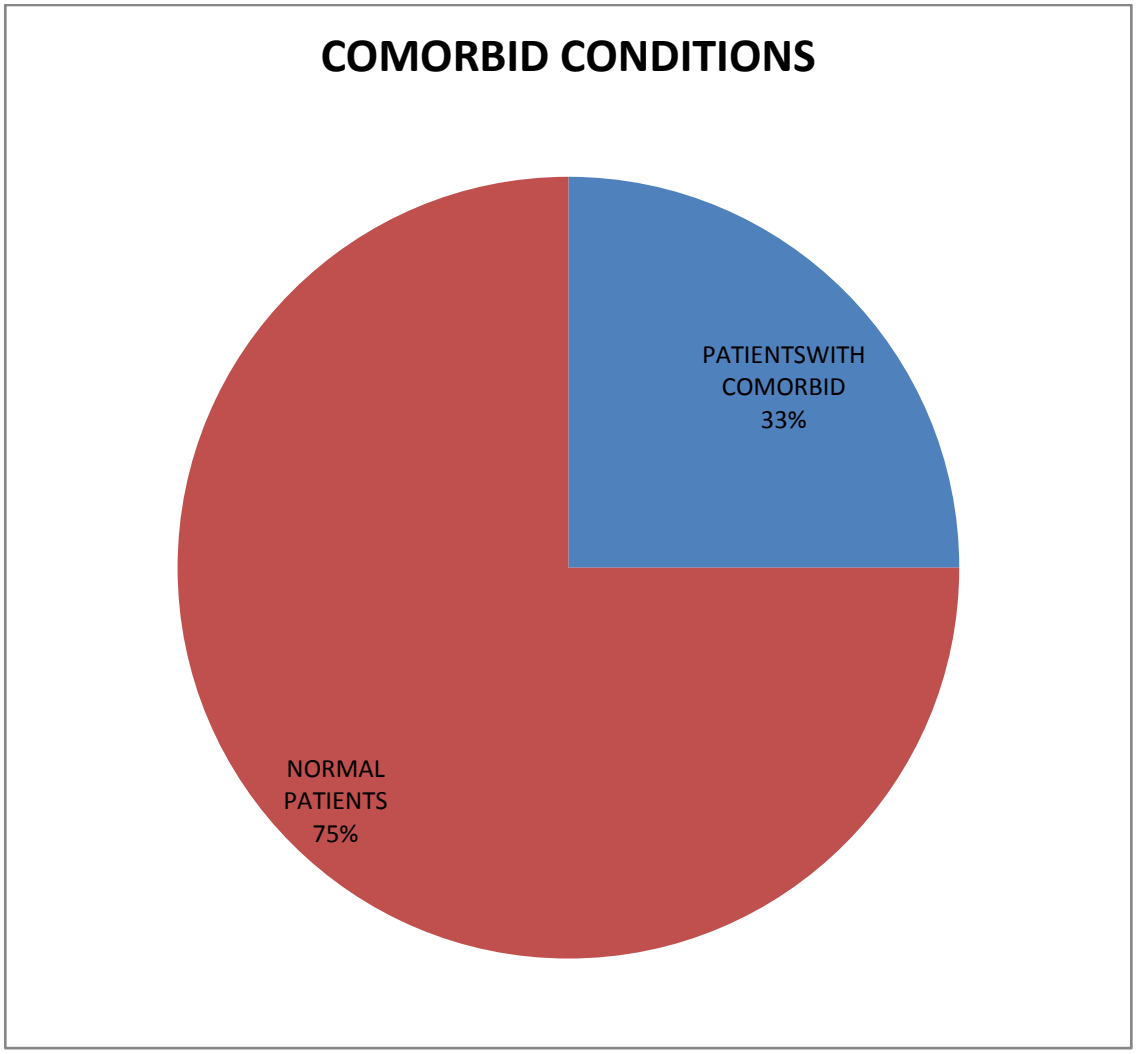


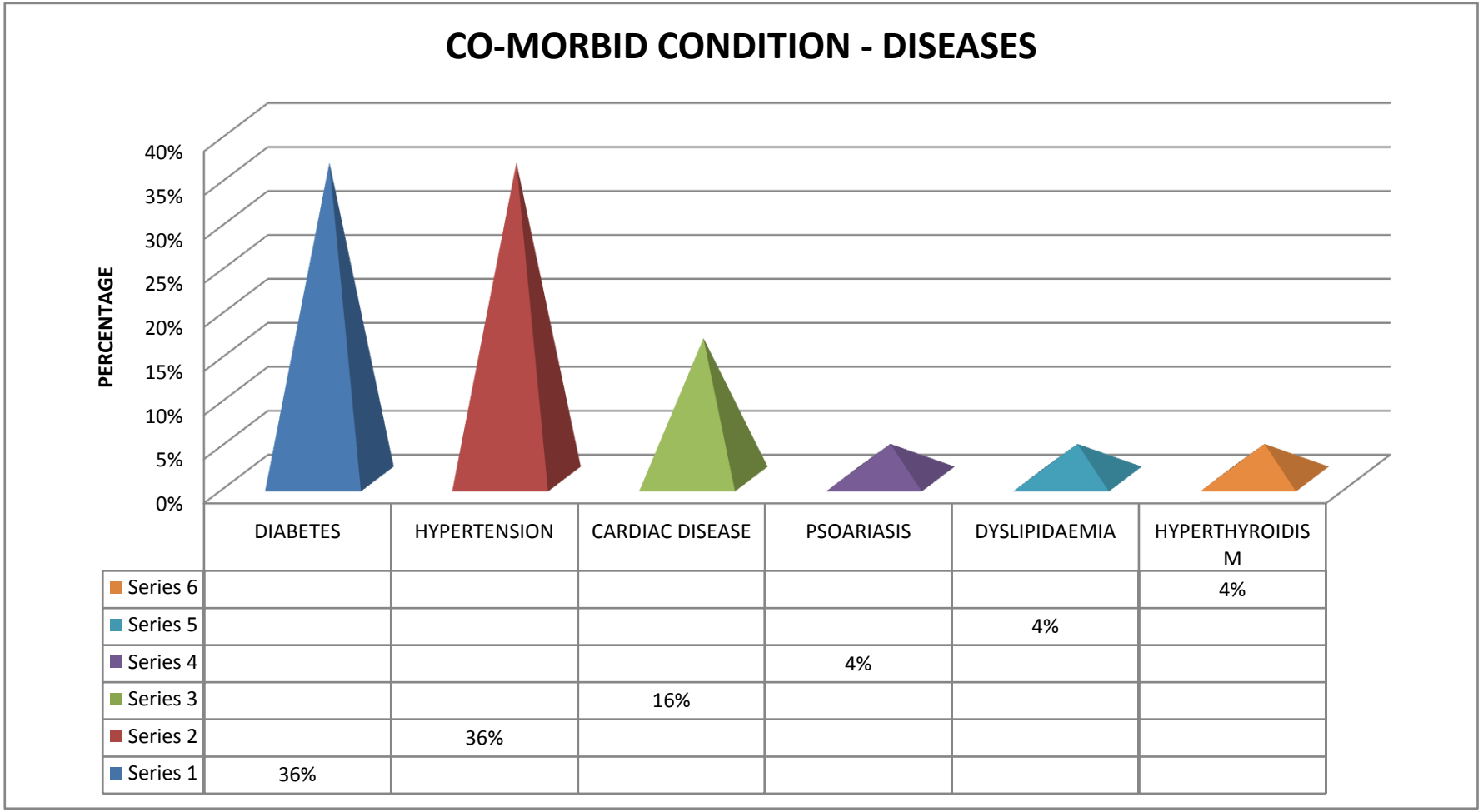
PREVIOUS SURGERY FOR PERIANAL ABSCESS:

NO OF CASES : 75

PERCENTAGE : 53.3%

COMORBID CONDITION: 32%



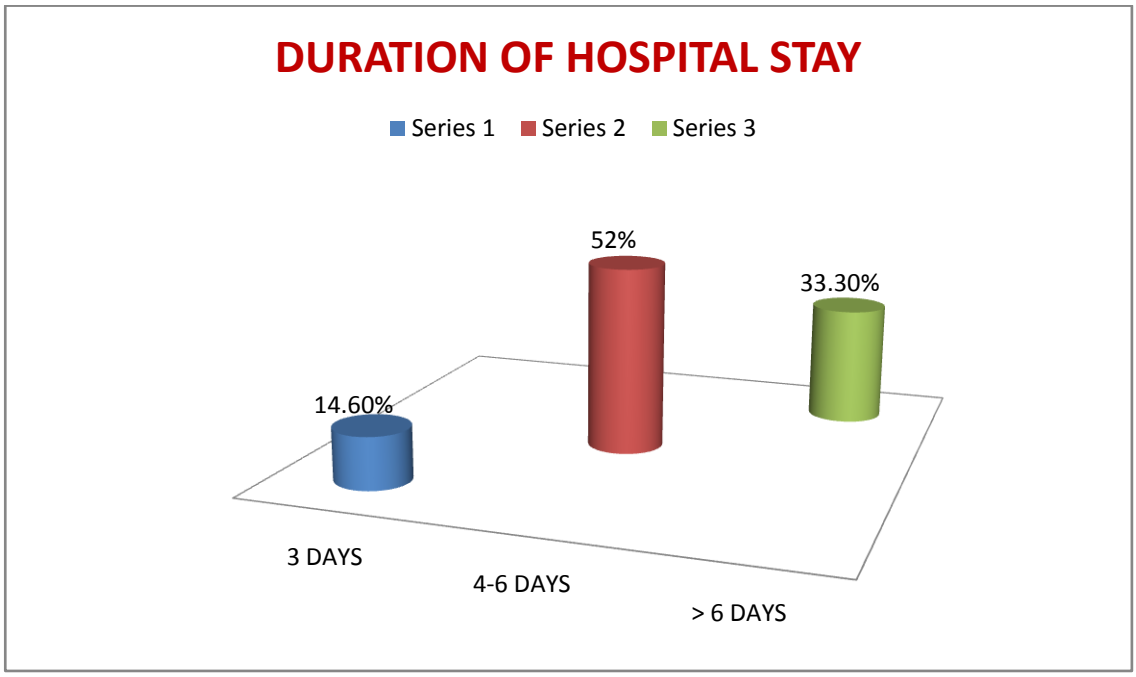

CO-MORBID CONDITION - DISEASES
PERCENTAGE
40%
35%
30%
25%
20%
15%
10%
5%
0%
DIABETES
HYPERTENSION
CARDIAC DISEASE
PSOARIASIS
DYSLIPIDAEMIA
HYPERTHYROIDISM
Series 6
4%
Series 5
4%
Series 4
4%
Series 3
16%
Series 2
36%
Series 1
36%

HOSPITAL STAY:

3 DAYS : 14.6%

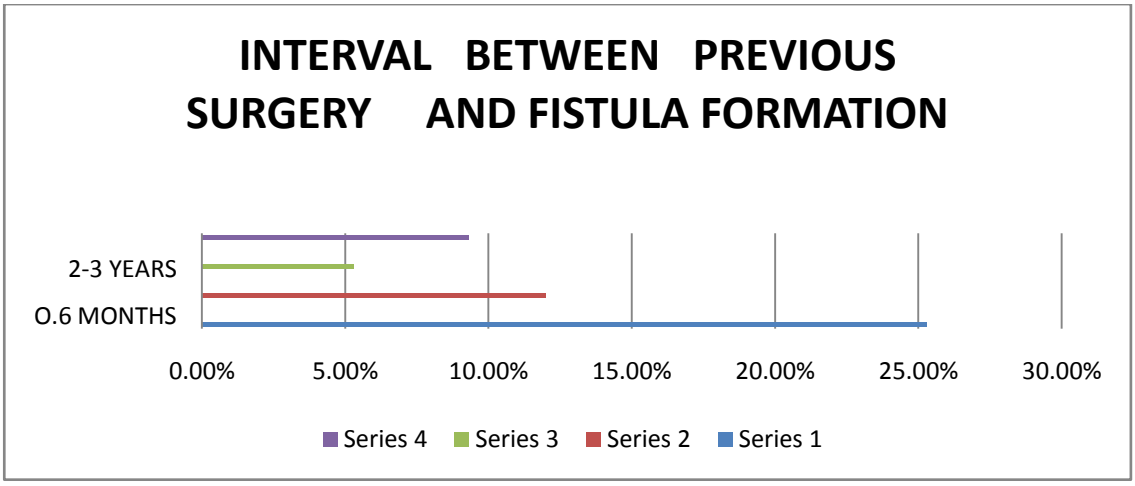
4-6DAYS : 52%

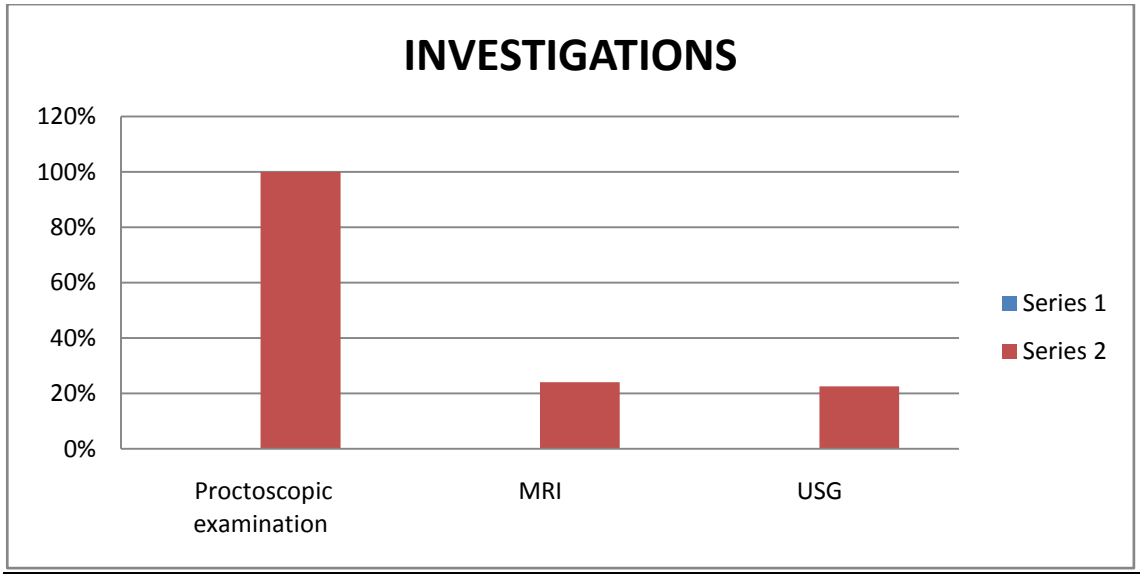
ABOVE 6 DAYS : 33.3%

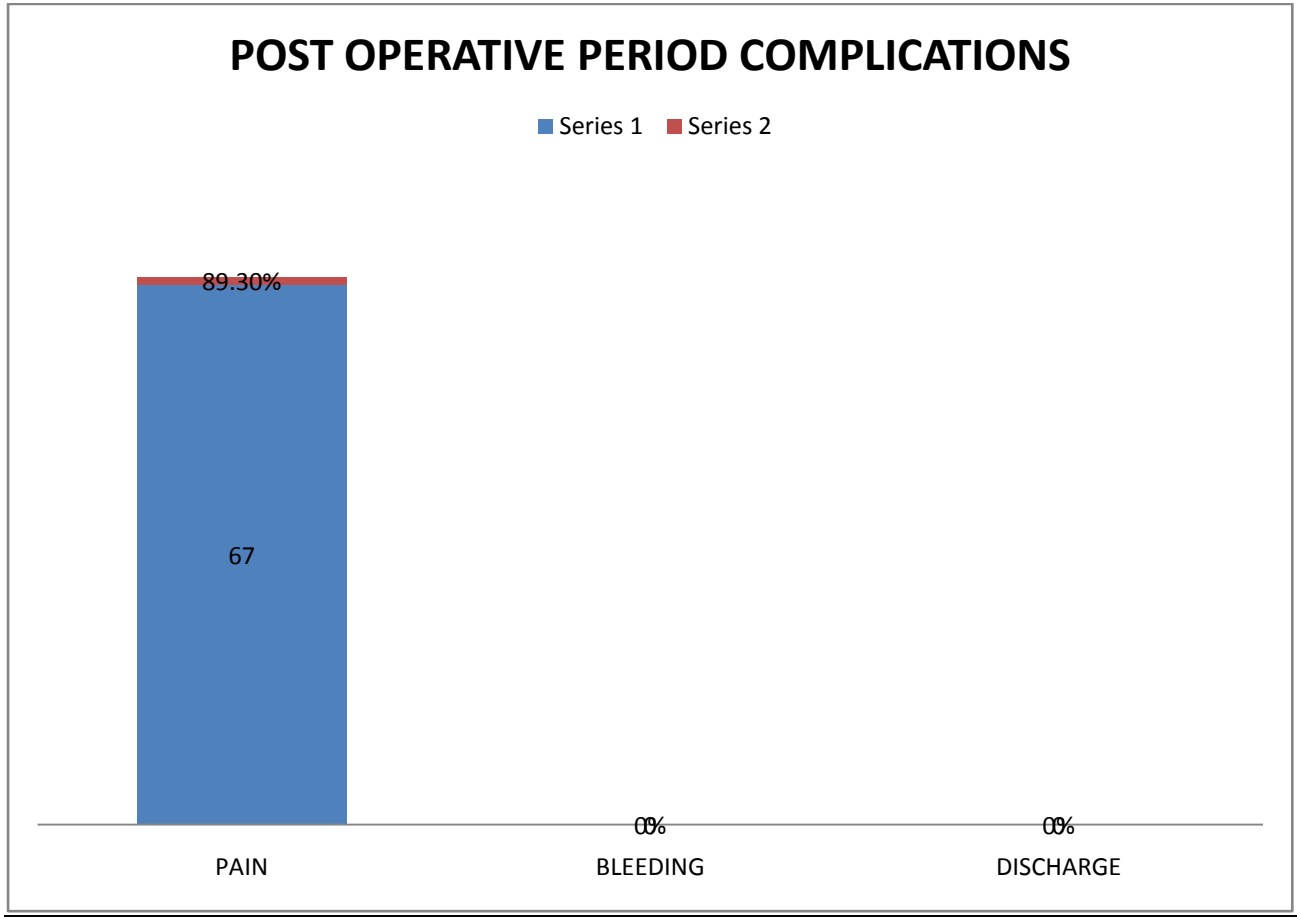


INTERVAL BETWEEN PREVIOUS SURGERY AND FISTULA FORMATION

0 -6 MONTHS	: 25.3%
7MONTHS – 1 YEAR	: 12%
2 -3 YEAR	: 5.3%
ABOVE 3YEARS	: 9.3 %


INTERVAL BETWEEN PREVIOUS SURGERY AND FISTULA FORMATION
2-3 YEARS
O.6 MONTHS
0.00%
5.00%
10.00%
15.00%
20.00%
25.00%
30.00%
Series 4
Series 3
Series 2
Series 1


INVESTIGATIONS
120%
100%
80%
60%
40%
20%
0%
Proctoscopic examination
MRI
USG
Series 1
Series 2


POST OPERATIVE PERIOD COMPLICATIONS
Series 1
Series 2
89.30%
67
0%
0%
PAIN
BLEEDING
DISCHARGE

Level of Problem * Type of Treatment Cross tabulation

	Type of Treatment									Total
Type	Posterior	Transphincteric	Intersphincteric	Recurrent	Perianal	Horse Shoe Shaped	Multiple	High Fistula	Intermedia	
Simple	1	13	11	3	24	2	3	1	2	60
Complex	2	1	1	2	7	1	1	0	0	15
Total	3	14	12	5	31	3	4	1	2	75

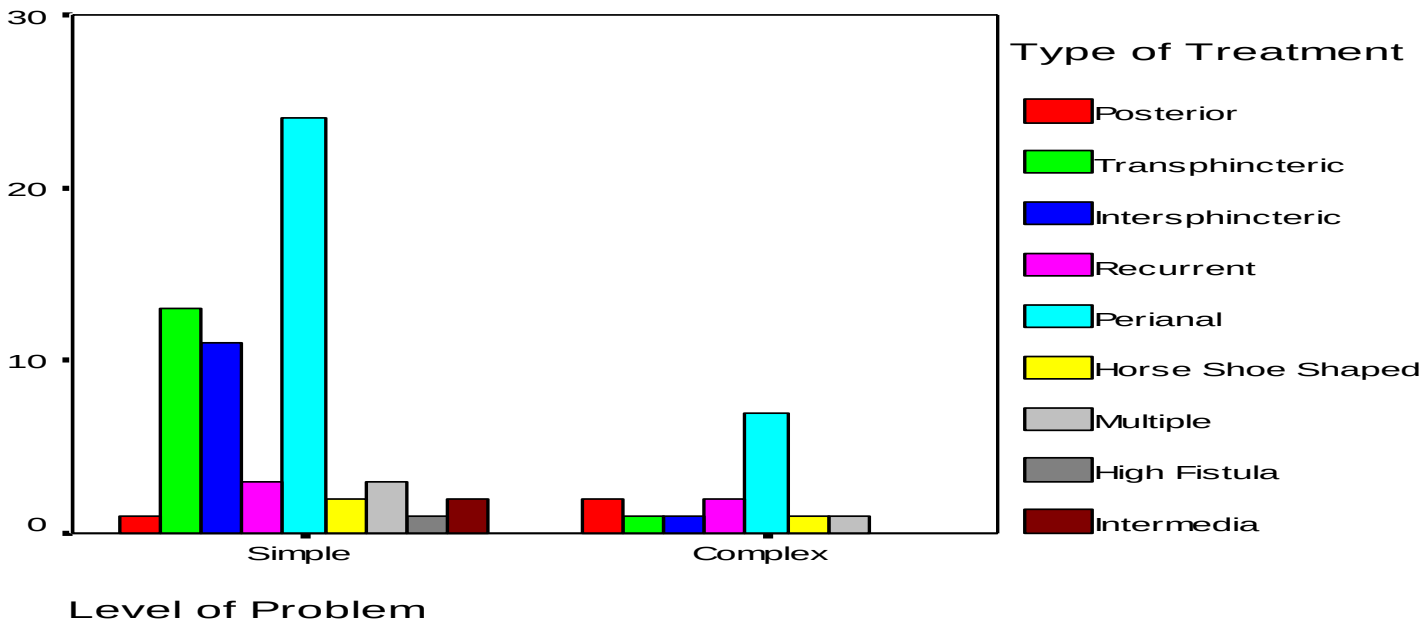
In order to test the significant difference among sample chi square test applied. For this hypothesis as mentioned below is developed.

Ho: There is no significant difference between level of problems and types of treatment.

H1: There is significant difference between level of problems and types of treatment.

From the output, Chi – square test value = 3.379

The P value is in this cases is .0852 which is higher than the 0.05 (5 percent level of significant). So there is much evidence to reject the null hypothesis at 5 percent level of significance. Therefore alternative hypothesis has been accepted. It seems that there is a significant difference between level of problems and types of treatment.


30
20
10
0
Simple
Complex
Level of Problem
Type of Treatment
Posterior
Transphincteric
Intersphincteric
Recurrent
Perianal
Horse Shoe Shaped
Multiple
High Fistula
Intermedia

Type of Treatment * Investigation Crosstabulation

Count

		Investigation			
		MRI	TRUS	proctoscopy	Total
Type of Treatment	Posterior	0	0	3	3
	Transphincteric	4	3	7	14
	Intersphincteric	9	3	0	12
	Recurrent	1	4	0	5
	Perianal	19	9	3	31
	Horse Shoe Shaped	2	1	0	3
	Multiple	3	0	1	4
	High Fistula	1	0	0	1
	Intermedia	1	1	0	2
Total		40	21	14	75

In order to test the significant difference among sample chi square test applied. For this hypothesis as mentioned below is developed.

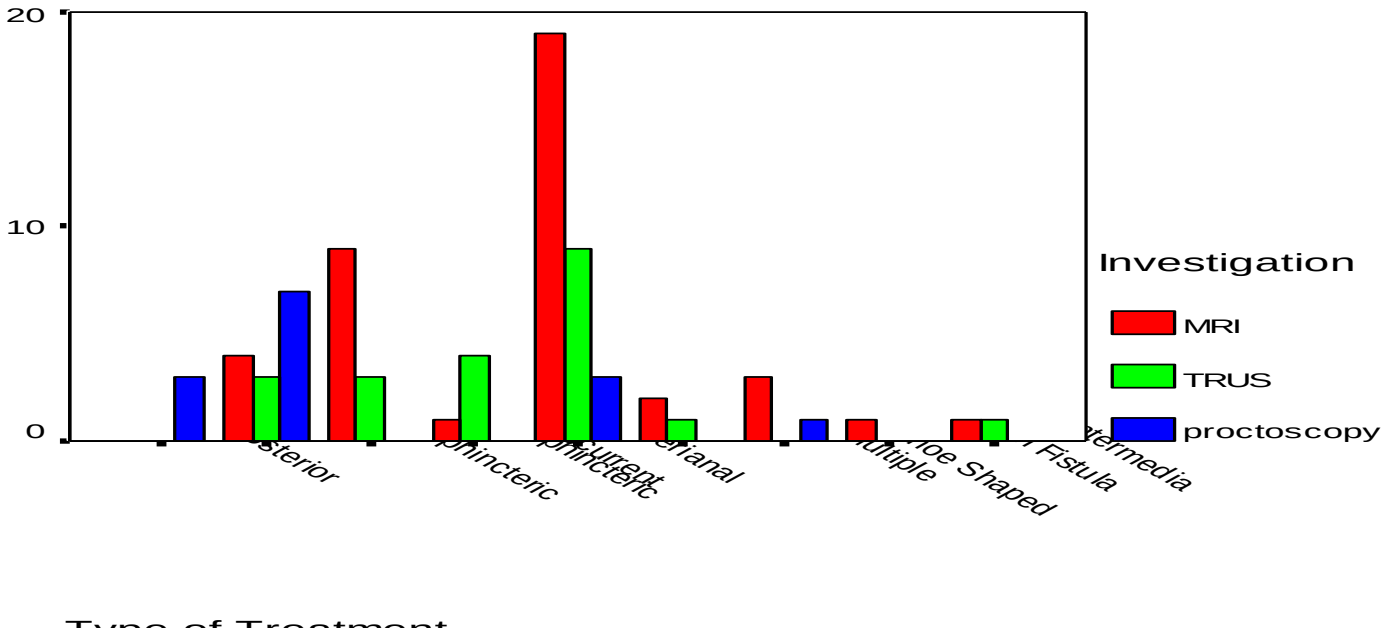
Ho: There is no significant difference between types of treatment and investigation.

H1: There is significant difference between types of treatment and investigation.

From the output, Chi – square test value = 14.217

The P value is in this cases is .0361 which is less than the 0.05 (5 percent level of significant). So there is much evidence to reject the alternative hypothesis at 5 percent level of significance. Therefore null hypothesis has been accepted. It seems that there is no significant difference between types of treatment and investigation

.


20
10
0
Investigation
MRI
TRUS
proctoscopy
Type of Treatment

DISCUSSION

DISCUSSION

Fistula in ano is an abnormal communication lined by granulation issue between anal canal and skin. These originate from anal glands located at the subepithelial layer of anal canal.

Milligon & Morgon classified fistula into high and low fistulas based on internal opening.

Park classified into submuscosal, intersphincteric, suprasphincteric and extra sphincteric

Various surgical Techniques include

1. **Fistulectomy**
2. **Fistulotomy**
3. **SETON**
4. **LIFT**
5. **VAAFT**

LIFT (Ligation of Intersphincteric Fistulous Tract) is a sphincter sparing surgery based on secure closure of internal opening and removal of infected granulation tissue.

VAAFT (Video Assisted Anal Fistula Technique) – Mainly introduced for complex Fistulas. It consists of diagnostic and operative phase. suprasphincteric fistula & high transsphincteric fistulas are safety treated by SETON Placement.

About 75 cases of Fistula in Ano have been operated in our institution.

Age & Sex

In our study MALE are predominantly affected – 80% of total cases. Fistula in Ano most commonly found between 30-50 yrs of age.

It constitutes totally of 68% .Occurrence of fistulas are more common in middle age group.

Types of Fistula

Fistula can be classified as simple and complex fistula. In our study about 80% are simple fistula that includes 64% operated in male, 16% in female.

Complex fistulas constitute about 20% - male 16% female 4%

Anal fistulas can be categorised either simple (or) complex.

A Simple anal fistula include low trans sphincteric and intersphincteric fistulas that cross the external sphincter.

Fistulas are complex if primary tract includes high trans sphincteric fistulas with (or) without a high blind tract. Suprasphincteric, and extrasphincteric fistulas, horseshoe fistulas, multiple tracts, anterior lying.

In our study intersphincteric fistula is most common It constitutes 46.6%. Here the fistulous track confined to intersphincteric plane.

Trans sphincteric fistula – 33.3%

Here the fistula connects the intersphincteric plane with ischiorectalfossa by perforating external sphincter.

Horse shoe fistulas

Incidence - 4% in our study. Here the fistulous tract goes from one ischiorectal fossa to contralateral one through posterior rectum.

Fistula with multiple openings constitute 5.3%

Anterior Fistula 2.6%

Clinical Features

- Patients presented to OPD with following Symptoms – pain, discharge, swelling in perianal region, itching, bleeding PR, Constipation and fever.
- Most common presentation is pain & discharge which constitute about 75%

CO-MORBID CONDITONS

- 33% of patients had co-morbid conditions – Diabetes, hypertension, Decompensated liver disease.

  Diabetes - 36%

  Hypertension – 36%

  Cardiac disease – 16%

  Others – 12%

Type of Procedure

In our study fistulectomy was done in 50% of cases Fistulotomy in 33.3% cases.

VAAFT - 6.7%

LIFT - 6.7%

SETON - 2%

SETON TECHNIQUE

- Seton Technique is done for 2 cases in my study.
- Both cases had high intersphincteric fistula to previous surgery in both case.
- One patient had diabetes, HTN and cirrhosis

Advantage

- No recurrence
- Post operative hospital stay 5 days

Disadvantage

- Regular follow up needed seton tightening
- Post operative complications more
- Wound healing comparatively less

VAAFT

- 6.7% cases underwent VAAFT
- Is done for to simple and 3 complex fistulas
- Post operative recovery very good
- Length of hospital stay 7 days
- Patients compliance better
- No recurrence

LIFT PROCEDURE

- Done in 5 cases. (6.7%)
- Mainly done for Intersphincteric fistula
- Post operative period, patients had less pain & would healing better
- Mean period of stay 5 days
- One patient had recurrence after 1 month which was managed by Fistulectomy

Post operative period

- Mean period of stay 3-5 days
- All patients treated with antibiotics, analgesics, symptomatic measure
- Pain is the Major complaint in our study

Recurrence

- Found in 5 cases (7%)
- Recurrence followed – Fistulectomy – 2 cases, Fistulotomy – 2 cases, Lift procedure – 1 case
- Mean average period between previous surgery and percent condition is 5 to 6 months

- Mean period of recurrence 3 months
- 3 patients had associated co-morbid condition – hypertension, liver disease & Diabetes

Conclusion

CONCLUSION

1. Incidence of Fistula in Ano is more common in men - 80%
2. Age Group – Most common between 30-50 yrs Constitutes about - 68%
3. In our study simple fistulas are 80% , complex fistulas 20%. Most common type of fistula belongs to intersphincteric type
4. Commonest presenting symptom in our patients is pain & discharge
5. Fistulectomy is the comment surgery performed
6. About 33% of patients has comorbidities – mostly associated with Hypertension and diabetes
7. Newer techniques like LIFT, VAAFT were also performed in our institution
8. Mean period of stay in our hospital is 3-5 days
9. All the patients are periodically followed up. 1 week, 1 month, 3months & 6 Months
10. 7% of patients had recurrence. Mean period of recurrence - 3 months. Recurrent cases were associated with comorbidities

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Annexure

ANNEXURE – 1 : PROFORMA

1. **NAME** **OP NO / IP NO:**
2. **AGE/SEX**
3. **ADDRESS**
4. **DOA:** **DOS:** **DOD:**
5. **COMPLAINTS AND DURATION**
   - **Pain**
   - **Discharge**
   - **Fever**
   - **Itching**
   - **Swelling**
   - **Constipation**

6. **PREVIOUS SURGERY FOR PERIANAL ABSCESS/ FISTULA**
7. **INTERVAL BETWEEN PREVIOUS SURGERY AND PRESENT CONDITION**
8. **COMORBID CONDITION**

EXAMINATION

1. **GENERAL EXAMINATION**

2. **LOCAL EXAMINATION:**
   - **I. SITE OF FISTULA**
   - **II. EXTERNAL AND INTERNAL OPENING**
   - **III. LENGTH OF FISTULOUS TRACT**
   - **IV. DISCHARGE**
   - **V. PERIANAL ABSCESS**

INVESTIGATIONS

1. **ROUTINE INVESTIGATIONS**
   - **I. Hb, TC, DC, ESR, BLOOD SUGAR, UREA, CREATININE**
   - **II. URINE ROUTINE**

III. HIV/HBSAG
IV. CXR/ECG

2. **SPECIAL INVESTIGATIONS**
   I. PROCTOSCOPIC EXAMINATION
   II. USG
   III. MRI FISTULOGRAM

TYPE OF FISTULA

A. HIGH / LOWANAL FISTULA
B. SIMPLE/ COMPLEX ANAL FISTULA

TYPE OF SURGERY

- LIFT TECHNIQUE/VAAFT
- FISTULOTOMY/FISTULECTOMY/SETON TECHNIQUE

ANAESTHESIA

INTRA OPERATIVE CARE

OPERATIVE TIME

INTRA OPERATIVE COMPLICATIONS

POST OP ANALGESIC REQUIREMENT

ANTIBIOTIC COVERAGE

POST OP PERIOD

- PAIN/DISCHARGE/BLEEDING
- FAECAL INCONTINENCE

LENGTH OF STAY:

POST OPERATIVE- FOLLOW UP

DURATION – 1 week, 1 month, 6 months, 1 year

COMPLICATIONS –

- **Discharge**
- **Pain**
- **faecal incontinence**
- **Bleeding**

WOUND HEALING

RESUMPTION OF ROUTINE ACTIVITIES

READMISSION/RECURRENCE:

MEAN PERIOD OF RECURRENCE

ANNEXURE – 2 : MASTER CHART

index	ip/op no	high/low anal fistula	simple/ complex	other types	type of surgery	date of surgery	stay in hospital	intra/ postop complications	Recurrence	first postop visit	subsequent postop visits	investigations - CT/MRI/ PROCTOSCOPY	associated illness
1	O1309 2701/I 14015369	low	simple	intersphincteric type	fistulectomy	6/6/2014	9 days	no	no	wound healthy	no cpts	MRI	nil
2	O1306 3871/I 13027656	low	simple	transsphincteric type	fistulotomy	13/9/2014	4 days	no	no	wound healthy	pain & swelling	TRUS	-
3	013040 500/i13 029503	low	complex	multiple ext opening	fistulectomy	02\10\2013	4 days	no	no	wound healthy	no cpts	proctoscopy	-
4	011029 012	low	complex	multiple ext opening	fistulectomy	5/9/2013	4 days	no	no	wound healthy	no cpts	proctoscopy	retroviral positive ,HEP B,
5	O1401 6851	low	complex	multiple ext opening	fistulotomy	18/3/2014	7 days	no	no	wound healthy	no cpts	proctoscopy	psoariasis
6	O1303 5457	low	simple,recurrent	recurrent fistula	fistulotomy	26/4/2014	7 days	no	no	wound healthy	no cpts	proctoscopy	-

7	O1306 1549	low	simple	intersphi ncteric type	fistulot omy	5/9/201 3	4 days	no	no	wound healthy	no cpts	proctoscopy	hep B
8	O1000 0664	high	complex	horsesha ped	fistulot omy with abscess drainag e	02\12\2 013	10 days	no	no	wound healthy	no cpts	MRI/PROC TOSCOPY/ USG	-
9	O1308 3718	low	simple	posterior perianal	fistulec tomy	28/11/1 3	7 days	no	no	wound healthy	no cpts	proctoscopy	nil
10	O1403 5669	low	simple	transsphi ncteric type	fistulot omy with seton techniq ue	12\6\14	6 days	no	no	incontin ence+	flatus/stress incontinenc e	MRI/usg	GERD
11	O1403 5596	high	simple	intersphi ncteric type	seton + I&D	6/6/201 4	4 days	no	no	wound healthy	no cpts	MRI	-
12	O1309 1349	low	complex	transsphi ncteric type	fistulec tomy	5/6/201 4	7 days	no	no	wound healthy	no cpts	MRI	MNG/reflu x esophagitis
13	O1403 5817	low	simple	intersphi ncteric	fistulot omy	31/5/14	6 days	no	no follow	wound healthy	no cpts	MRI	DM/anaem ia/hypothyr oidism

14	O0808 6367	high	simple	intersphi ncteric type	seton	9/5/201 4	6 days	no	no	wound healthy	no cpts	MRI	cirrhosis/D M/PORTA L HTN
15	O1403 0241	low	simple	posterior midline	fistulot omy	7\5\201 4	5 days	no	no	wound healthy	no cpts	TRUS	DM/HTN
16	O1302 1638	low	simple	posterior midline	fistulot omy	7\5\201 4	5 days	no	no	wound healthy	no cpts	TRUS	-
17	O1402 6174	low	simple	transsphi ncteric type	VAAF T	22/4/20 14	7 days	no	no	tendern ess+	tenderness +	TRUS	gastric ulcer
18	O1303 5981	low	simple	intersphi ncteric	fistulec tomy	18/3/20 14	6 days	no	no	wound healthy	no cpts	TRUS	-
19	O1306 8972	low	complex	intermed iate fistula	fistulec tomy	5/2/201 4	5 days	no	no	faecal incontin ence+	incontinenc e during urge/cough	TRUS	DM/HTN/ CRF/CAD/ MYASTH ENIA GRAVIS
20	O1402 9989	low	simple	intersphi ncteric	VAAF T	9/5/201 4	4 days	no	no	wound healthy	induration &discharge +	proctoscopy	hypothyroi dism
21	O1402 7328	high	complex	transsphi ncteric type	fistulec tomy/s eton	8/5/201 4	7 days	no	no	wound healthy	wound healthy	MRI	-
22	O1307 0446	low	simple	intersphi ncteric	fistulot omy	3\10\20 13	3 days	no	no	wound healthy	no cpts	proctoscopy	-

23	O0906 7439	low	simple	transsphi ncteric type	fistulec tomy	24/1/20 15	3 days	no	no	wound healthy	no cpts	TRUS	-
24	O1403 8325	low	complex	transsphi ncteric type	fistulot omy	13/6/20 14	5 days	no	YES	wound healthy	recurrence +	MRI	-
25	O1403 9212	low	simple	intersphi ncteric	fistulot omy	17/6/20 14	5 days	no	no	wound healthy	induration+	proctoscopy	-
26	O1404 0317	low	complex	intersphi ncteric	fistulot omy	17/6/20 14	5 days	no	no	wound healthy	induration+	proctoscopy	-
27	O1302 0782	low	complex	intersphi ncteric	fistulec tomy	4/7/201 4	5 days	no	no	wound healthy	no cpts	TRUS	-
28	O1409 4495	low	complex	multiple ext opening	VAAF T	20/7/20 14	10 days	no	no	wound healthy	no cpts	TRUS	DM
29	O1404 1180	low	simple	intersphi ncteric type	fistulec tomy	21/7/20 14	14 days	no	no	wound healthy	no cpts	MRI	-
30	O1404 2059	low	simple	intersphi ncteric	fistulot omy	22/7/20 14	14 days	no	no	wound healthy	no cpts	TRUS	
31	O1404 6377	low	complex	horsesha ped	fistulot omy	22/7/20 14	14 days	no	no	wound healthy	no cpts	proctoscopy	

32	O1002 3237	low	simple	intersphi ncteric	fistulot omy	22/9/20 14	5 days	no	no	wound healthy	no cpts	MRI	
33	O1406 7088	low	simple	intersphi ncteric type	fistulec tomy	30/9/20 14	5 days	no	no	wound healthy	no cpts	TRUS	
34	O1407 1483	low	simple	intersphi ncteric type	fistulec tomy	29/10/2 014	5 days	no	no	wound healthy	no cpts	MRI	
35	O1407 1507	low	simple	intersphi ncteric	fistulec tomy	31/10/2 014	5 days	no	no	wound healthy	no cpts	proctoscopy	retroviral.
36	O1307 1515	low	simple	intersphi ncteric	fistulec tomy	6\10\20 13	4 days	no	no	wound healthy	no cpts	proctoscopy	CAD
37	O1307 6426.	low	simple	intersphi ncteric	fistulec tomy	29/10/2 013	6 days	no	no follow	wound healthy	no cpts	proctoscopy	
38	O1308 0496	low	simple	intersphi ncteric type	fistulec tomy	16/11/2 013	6 days	no	YES	wound healthy	perianal absces \fistula - I&D	TRUS	
39	O1308 2509	low	simple	intersphi ncteric type	fistulec tomy	21/11/2 013	3 days	no	no follow	wound healthy	no cpts	proctoscopy	sickle cell trait
40	O1305 0561	low	simple	intersphi ncteric	fistulot omy	5/8/201 3	3 days	no	no	wound healthy	no cpts	proctoscopy	
41	O1305 2286	low	simple	intersphi ncteric	fistulec tomy	7/8/201 3	4 days	no	no	wound healthy	residual lesion	proctoscopy	

42	O1306 0417	low	simple	intersphi ncteric	fistulec tomy	23/8/20 13	3 days	no	no	wound healthy	no cpts	proctoscopy	
43	O1306 1549	low	simple	intersphi ncteric	fistulot omy	5/9/201 3	5 days	no	no	wound healthy	no cpts	proctoscopy	hepatitis B
44	O1307 9818	low	simple	intersphi ncteric	LIFT	20/11/2 013	4 days	no	no	wound healthy	no cpts	proctoscopy	
45	O0803 5873	low	simple	recurrent fistula	fistulec tomy	10\12\2 014	4 days	no	YES	wound healthy	recurrence +	proctoscopy	
46	O0604 8549	low	simple	intersphi ncteric	fistulec tomy	30/12/2 014	4 days	no	no	wound healthy	no cpts	MRI	
47	O1008 0843	low	simple	intersphi ncteric	fistulec tomy	3/1/201 5	4 days	no	no	wound healthy	no cpts	proctoscopy	
48	O1404 2113	low	simple	intersphi ncteric	fistulec tomy	18/11/2 014	7 days	no	no	wound healthy	no cpts	proctoscopy	HTN/DCL D
49	O1305 8901	low	simple	recurrent fistula	LIFT	6\11\20 13	4 days	no	YES	wound healthy	recurrence +	TRUS	DM
50	O0902 9794	low	simple	transsphi ncteric type	LIFT	18/11/2 014	4 days	no	YES	wound healthy	recurrence +	MRI/TRUS	hypothyroi dism
51	**O0600 9593**	low	simple	transsphi ncteric type	LIFT	**30/8/20 14**	5 days	no	no	wound healthy	recurrence +	MRI	

52	O0504 3957	low	simple	transsphi ncteric type	fistulec tomy	26/4/14	12 days	no	YES	wound healthy	recurrence +	TRUS	nephrotic synd/CVA/ IHD
53	O1106 3274	low	simple	intersphi ncteric	fistulec tomy	5/3/201 5	4 days	no	no	wound healthy	no cpts	TRUS	
54	O1402 4554	low	simple	transsphi ncteric	VAAF T	22/6/14	7 days	no	no	wound healthy	no cpts	TRUS	Impaired glucose tolerance
55	O1501 3011	low	simple	intersphi ncteric	fistulec tomy	4/3/201 5	4 days	no	no	wound healthy	no cpts	proctoscopy	
56	O1305 9061	low	simple	intermed iate fistula	fistulec tomy	12\2\20 14	5 days	no	YES	wound healthy	recurrence - I&D	proctoscopy	
57	O1400 2409	low	simple	high fistula	fistulec tomy	20/1/20 14	5 days	no	no	wound healthy	no cpts	proctoscopy	Acid peptic disease
58	O1000 0664	low	simple	recurrent perianal	fistulec tomy	7/1/201 4	5 days	no	no	wound healthy	no cpts	proctoscopy	
59	O1501 3180	high	simple	transsphi ncteric	fistulec tomy	7/3/201 5	14 days	no	no	wound healthy	no cpts	TRUS	
60	O0906 7439	low	simple	transsphi ncteric recurrent	fistulec tomy	24/1/20 15	3 days	no	no	wound healthy	no cpts	TRUS	

61	I14026966	low	simple	transsphincteric	LIFT	23/9/2014	5 days	no	YES	Discharge	recurrence	MRI	HTN
62	o14004850	low	simple	transsphincteric	fistulotomy	23/1/2014	4 days	no	no	wound healthy	no cpts	proctoscopy	
63	O14019183	low	simple	transsphincteric	fistulotomy	18/3/2014	3 days	no	no	wound healthy	no cpts		
64	O13077487	low	simple	transsphincteric	fistulotomy	13/5/2014	3 days	no	no	wound healthy	no cpts	proctoscopy	
65	O15002461	low	simple	transsphincteric	fistulotomy	21/1/2015	3 days	no	no	wound healthy	no cpts	TRUS	
66	O10080843	low	simple	transsphincteric	fistulotomy	3/1/2015	4 days	no	no	wound healthy	no cpts	proctoscopy	
67	O13006167	low	simple	posterior	fistulotomy	18/3/2015	5 days	no	no	wound healthy	no cpts	proctoscopy	
68	O15023004	low	simple	transsphincteric	fistulotomy	14/4/2015	7 days	no	no	wound healthy	no cpts	TRUS	
69	O15023363	low	simple	transsphincteric	fistulotomy	16/4/2015	7 days	persistent hypotension	no	wound healthy	no cpts	TRUS	

70	O1303 1743	low	simple	horseshoe,intersphincteric	VAAFT	24/4/2015	8 days	no	no	wound healthy	no cpts	MRI	DM
71	O1206 2586	low	simple	transsphincteric	fistulotomy	30/4/2015	5 days	no	no	wound healthy	no cpts	TRUS	
72	O1502 3384	recurrent	simple	transsphincteric	fistulotomy	21/4/2015	4 days	no	no	wound healthy	persistent pain/giddiness	TRUS	
73	O1502 8584	low	simple	transsphincteric	fistulotomy	7/5/2015	4 days	no	no	wound healthy	no cpts	proctoscopy	
74	O1502 9382	Low	Simple	intersphincteric	fistulectomy	9/5/2015	5days	no	no	wound healthy	no cpts	proctoscopy	
75	O1502 9584	Low	simple	intersphincteric	fistulectomy	10/5/2015	4days	no	no	wound healthy	no cpts	proctoscopy	